Telephony.

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"Hold the Wire."

In a recent issue of a magazine was printed a cartoon depicting the severe punishment in the next world which awaits the telephone user who compels the party called to "hold the wire" until the former gets ready to open the conversation. Appropriately enough, the infernal regions are shown in the drawing with the "hold the wire" fiend in the foreground standing on a red-hot griddle while Satan's assistants are gathered about ready to emphasize the penalty by prodding the victim with wicked-looking spears. The look of anguish on the face of the individual who was wont to make busy men wait on his convenience on earth, may, to some extent, recompense those who have lost both time and patience hanging on to a receiver while the party calling economized his own time by working at his desk until he was sure the other was on the wire.

There is nothing so aggravating as to be forced to "hold the wire" after one has been called to the telephone. Sometimes, of course, this delay is necessary, but too often the telephone subscribers impose outrageously on the rights and forbearance of other people simply because they are at a distance. Probably every man has been called to the telephone only to have a voice at the other end of the line say, more or less commandingly: "Hold the wire, Mr. Blank wants to talk to you."

The message comes usually from a stenographer or clerk who has called at the behest of Mr. Blank, who doesn't want to lose any of his own time, but he is willing that you should lose your time. He expects that you are meekly waiting until he finds it convenient and condescends to take up his receiver to transact the business in hand. Nine times out of ten, too, he has called you in his own interest. That makes it all the more galling to "hold the wire."

As said before, sometimes it is necessary to ask the party called to wait a minute, but that is no excuse for those who make it a practice of compelling others just as busy as themselves to hold the wire while they attend to other matters. There is no more frequent violation of telephone etiquette than this practice, and it should be abolished as far as possible.

If Mr. Blank wished to talk personally with a friend, he would not invite him to come to his office and then deliberately turn his back and attend to other matters without an apology, yet the "hold the wire" discourtesy is equally flagrant. Many telephone users have suffered so much that they have made it a rule not to humor such impoliteness and invariably "hang up" when they get the "hold the wire" message. They are not to be blamed, for the practice has been shamefully abused and those who are responsible, need an effective rebuke.

INTERSTATE COMMERCE COMMISSION ISSUES ORDER.

The Inter-state Commerce Commission has ordered all common carrier telephone companies to furnish by October 1 a detailed statement of their organization, equipment and physical and financial operations.

This is the first order of the commission since the formal beginning of the telephone investigation. Already the inquiry has been very extensive, special agents of the commission having gathered an immense amount of data bearing upon the operation of telephone companies.

As soon as practicable the commission will hold in various parts of the country, public hearings at which testimony will be taken as to the rates and operating methods of such companies as come within the jurisdiction of the commission.

Success Isn't Found in Mirrors

By HERBERT KAUFMAN

The world's work is still undone. The wings of a million ambitions are beating the air. Opportunity speaks in a myriad of tongues. Here science calls. There art beckons. Yonder the whistles of industry scream.

The world teems with new dreams and new schemes. New forces are about us and new powers within us.

This is a century of splendid dares and superb fulfillments, but you are missing it all. You're looking in the wrong direction. The man in the mirror isn't worth a moment's thought. The looking glass flatters. It won't tell the truth. It always magnifies.

Turn about! Watch the clock instead.

Men of real ability are too seriously engaged to take themselves seriously. They have a definite and important use for every minute. They need so much time for action that they haven't leisure for self-satisfaction.

They don't bother about themselves. They're calculating what tomorrow will produce; guessing the message in the next sunrise; surveying paths; inventing; organizing; mapping their campaigns of destiny.

The instant you're content with your progress, you'll cease to progress.

Behind you are millions of eager, avid, tense, resourceful beings, straining every muscle of will, urging every resource of brain to take what you have; to be what you are; to pass and surpass you.

You can't stand still because you block the roadway. Move on, or you will be trampled under foot. When you rest on your laurels, you've chosen a poor couch.

What you were yesterday doesn't interest us today. We want to know what you will do tomorrow. We've paid you for the past, and if you don't fight as hard to retain what you obtain, a longer wit and stronger arm will seize your undefended position. Every day another horde of want-lashed outsiders pours into our ports and menaces your security.

You can't tell from what quarter, or from what ancestry, or at what time, to anticipate your successor.

You were born a few centuries too late. Back in the king-laden epochs, when ignorance and brutality were supreme, society divided class from mass, established orders of "Nobility," and designated the status of a man before his birth.

But coats-of-arms no longer count. It's the arms in the coat now and the courage behind the arm.

There is no law that will protect you against the law of survival. The fit finish in the fore. The strongest last longest. Honest ability wins.

Now get down to hard pan and labor just as sternly to last as you once struggled to be first. Keep undertaking anew or you will overtaken by a newcomer.

Move faster! Forget about yourself! What you achieve is important, and your importance is based upon your achievement.

If your works can't talk for you, talk won't work for you.

Copyright by Herbert Kaufman

The Rejuvenation of the Craneville Telephone Exchange

A Story in Serial Form, Telling How a Rundown Telephone Plant Was Rebuilt, Enlarged, and Changed Successively from a Grounded to a Local Battery Metallic System and Later to Common Battery—First Installment

By Paul Hamilton

[AUTHOR'S FOREWORD: In this narrative, the author desires it to be generally known that the theoretical subjects and practical cases discussed are arranged without consideration of chronilogical order. Neither is there to be any attempt at "fine writing." The subject matter has been collected in various parts of the wide field of telephony and rearranged to suit the imaginary conditions at Craneville. The various points for discussion and explanation will be taken up as they would be most liable to take in the general conduct of such a plant. Care will be taken to avoid the use of sines cosines, hieroglyphics, and equations, as the characters in the story are but average men, to whom such things are unintelligible. The author does not assume that the readers of TELEPHONY are lacking in intellect, but he does assume that a majority of them have not been favored with the opportunity of studying higher mathematics and electrical engineering. In actual practice he has found that algebraic formulas are difficult to remember, while if their meaning can be impressed upon the mind by a simple word statement, it is easily recalled when occasion requires. In other words an endeavor will be made to place the theoretical principles of telephone practice before the reader by useing elementary terms throughout. In conclusion the author's idea is not to expound any new theories, or principles, but to place before the readers of TELEPHONY, a word picture the meaning of which will be easily retained in the mind.]

HE LOOKS, RUN DOWN, BUT MAYBE THE RIGHT TREATMENT WILL BRING HIM ROUND
HE'S SEVEN, BUT THERE'S ALWAYS SOMETHING WRONG WITH HIM - HE DOESN'T PLEASE ANYONE!
NEW METHODS
LATEST PLANS
BE$T TONIC
IDEAS
DR. BARROWS
DR. RANKIN
CRANEVILLE TELEPHONE CO
BRIGGS

"It Depends Whether the Man Thinks Well Enough of It to Invest."

"Hello 'Germany,'" called out Big Frank Rice.

"Hello Frank, how you are anyway," returned "Germany" Dietz.

The two met under the protecting branches of the wide spreading elms that line the east road. Big Frank, by which name he was generally known, leaned the two magneto sets he was carrying against a tree, hung his spurs across the fence, and proceeded to fill his pipe. "Germany" removed his hat and wiped his face industriously for a moment, as the day was very warm, eying the telephones with interest.

"How-do-do, my old friend," he burst forth jovially. "I thought when I fastened you on the wall in old man Bobey's kitchen, your wanderings were over. My! my! But how you have changed in one little year—more than Big Frank or me. Such bad treatment as you have had. Maybe next time Frank will find you a better place. Shake anyway old friend," and with that Germany grasped the transmitter arm and nearly pulled it from its fastenings.

"Taking 'em out Frank," he inquired?

"A few at a time," answered Frank. "What's the use of trying to keep them in service any longer? Folks know when they've had enough of them. Some are pretty bad."

"How many have you got left?"

"This leaves 285. The game's about up, Germany. Can you get me a job down at the brickyard?"

"Sure I can."

"Well, maybe I'll want one. It depends upon whether the man who came this morning thinks enough of the plant to invest his money in it. That reminds me! I've got to dispose of these two pieces of junk somewhere. It won't do to lug them into the office today."

"It's time someone was doing something for sure. Pat Rankin maybe can run a livery barn, but for telephones he is nix," remarked Germany.

"I guess you're more than half right. Rankin is a good business man, generally speaking, but the telephone business can't be made a side issue. He takes personal charge of his livery stable and looks pretty closely after his real estate affairs also, but he seems to think the telephone business will look after itself. I almost wish I had quit a year ago when you did."

"There's the last instrument that I put in," said Germany, indicating the one which had called forth his previous comment. "Maybe if that fellow buys the exchange, I'll put him up again."

"If Rankin could be convinced that poles, wire, and equipment do not last forever, there would be some chance of making this plant pay. Why Germany!" exclaimed Big Frank. "All he's bought new in a year is 50 dry cells, a couple of kegs of knobs, a few screws and nails, and two or three coils of fence wire."

"Well I don't know, but maybe that fellow will buy him, huh?" responded Germany, preparing to go on his way.

"I'm coming down to the brickyard tomorrow with some batteries. They won't be new ones, but perhaps they'll help out a little. If there is anything new, I'll see you."

"All right Frank. Good bye friend," he added as Big Frank swung the dilapidated instrument upon his shoulder.

Big Frank resumed his way toward the business center of Craneville, but had not proceeded three blocks when he was accosted by a man engaged in mowing a lawn.

"Say Frank, when can you come in and take out my telephone? My wife wants to paper the hall and that useless contraption covers quite a bit of space."

"Have you spoken to Mr. Rankin about it," inquired Frank? "I can't do it without his order."

"I've spoken to him a dozen times but to no purpose."

'We're pretty busy just now."

"Taking out telephones I presume. Well if something isn't done in a week, you'll find the thing in my woodshed."

"I'll see Mr. Rankin and try to let you know tomorrow. I can take it off the wall while the paper is being hung, if that will help any," said Frank in an attempt to compromise.

"What's the use of keeping the thing? It's no ornament, and you can't talk over it with any satisfaction," returned the subscriber.

"I'll look into that too, and see you tomorrow without fail."

"All right Frank, I'll leave it to you." And with that the man started his mower, while Frank continued on his way to the livery barn, where he stored the two instruments before going to the exchange.

The Craneville telephone exchange occupied a room in the rear of Rankin's real estate and loan office. The sign in front of the two-story frame building heralded the names of both, to those who passed along the street.

The operation of the telephone switchboard during business hours was in charge of a young lady named Kitty De Land, whose additional duties of typist and bookkeeper were given preference over the work at the switchboard, which received attention last. She answered subscribers' calls reluctantly, and for the most part to silence the alarm which continued its incessant clatter until the drop shutter was restored.

At night a young medical student unfolded his cot in the switchboard room, and gave fairly reliable service attention, in exchange for his tenancy.

The day that Big Frank met "Germany" Dietz on the east road, P. J. Rankin sat at his desk smoking meditatively, while Miss De Land was experiencing her usual morning difficulties with several angry subscribers. His reverie was interrupted by a stranger entering the door.

"Mr. Rankin I believe," said the visitor.

"The same," responded the sole owner of various enterprises, the telephone plant being one of them.

"What is it Kitty?" queried Mr. Rankin in almost the same breath, in answer to a verbal summons from the rear room.

"Old Mis' Stokes wants to talk to you."

"Can't you talk to her?"

"I've talked 'til I'm black in the face. She's crazy, that's what ails her. I'll plug her line out, that's what I'll do and I told her so, too," was Kitty's reply.

"Well put her on and I'll have a gentle word with her."

The proprietor turned his swivel chair until he faced a telephone attached to the railing at one end of his desk. Scarcely had the receiver reached his ear, when, in a high-pitched voice, plainly audible to the waiting visitor, came the reply to his commonplace "hello."

"Is that you, Mr. Rankin? Well, I want to tell you that if you don't do something to that hussy that 'tends to the telephones, I will. I ——"

"Why! why! what's the matter, Mrs. Stokes?"

"Ain't I telling you, what's the matter. It's that fuzzy haired girl down there. I reckon she's got the bell to my telephone stuck up with a hat pin or a wad of gum. I can't get nothing nor nobody."

"Well! well! Mrs. Stokes! We're busy this time in the morning. Perhaps she was answering somebody else. You know ——"

"I know I've as good a right to be answered as anyone else, but I know she wasn't no such thing. She was talking to that clerk down at the bank—that's what she was doing, and if I ——"

"Now Mrs. Stokes, you were young once, and I remember well the time when, if you'd had a telephone, more than one clerk would have been busy. I ——"

"Aw, go on with your blarney Pat Rankin. 'Tis yourself that would have kept the wires busy—with all the girls wearing their ribbons for you. You ——"

"Maybe it would have saved me many a lonesome mile, driving out to your place, only to find that a fellow with a faster horse had gotten there ahead of me."

"'Twas no fast horse that Jerry Stokes drove, Pat Rankin, but he never stopped by the way to smile at the other

OH YES, I'LL BE THERE!
GEE, OLD MIS' STOKES IS RINGING THE BOARD TO PIECES - NO, I WON'T - I'LL LET HER RING. LISTEN TO HER!
HELLO THERE - LINE'S BUSY! OH YOU WILL! ALRIGHT. TALK TO PAT RANKIN!! TALK YOUR HEAD OFF! AIN'T SHE THE LIMIT!

"Miss DeLand Was Experiencing Her Usual Morning Difficulties."

girls. He doesn't stop now on his way home to dinner either, and if I don't get the meat delivered, it will be near the death of me."

"And are you trying to get Schneider's market?"

"More of your blarney. 'Tis O'Malley's I want, as well you know."

"Oh Kitty," called Mr. Rankin, "is 113 busy?"

"Yep, talking to Mis' Rutherford."

"Well, you tell Mrs. Rutherford to wait a minute and put Mrs. Stokes on the line."

"Next time I'll talk to her myself," called out Kitty indignantly.

"Yes sir, I'm Rankin," said that gentleman, turning to his waiting visitor. "I'm usually here at this time, for Kitty often has trouble she cannot handle single handed. Come inside," indicating a gate in the railing which en-

closed a space considered as his private office, "and take a seat. You wished to see me?"

The visitor was a man of medium height and sturdy build. His face was round and firmly lined, though not ruddy, indicating continuous confinement. He was well dressed but his appearance was that of an ordinary business man. His expression was one to inspire confidence, as it betokened self-confidence to a certain degree.

Pat Rankin, being almost as good a judge of men as of horses—and being a past master in the latter—knew at once that this man had come to him with a definite purpose in mind. His action was evidence of this, as rarely were strangers invited through the little gate until some idea of their business had been obtained.

(To be continued.)

Great Demand for Rural Lines in Saskatchewan.

Surpassing the record of the highest previous year by a very wide margin, more than 150 applications for the incorporation of rural telephone companies throughout the province of Saskatchewan have been received by the provincial department of railways and telephones, says Farm and Home, of Regina, Saskatchewan. The applications represent more than 4,000 new subscribers to the provincial system, and the fulfilment of the contracts will involve the construction of approximately 3,500 miles of line.

Not since the formation of the province has such an active demand for new telephone service been known. The department is today inundated with inquiries respecting the organization of rural telephone companies, and as the year advances it becomes apparent that wherever the financing of a telephone service may be considered feasible, the farmers are likely in the very near future to undertake the task.

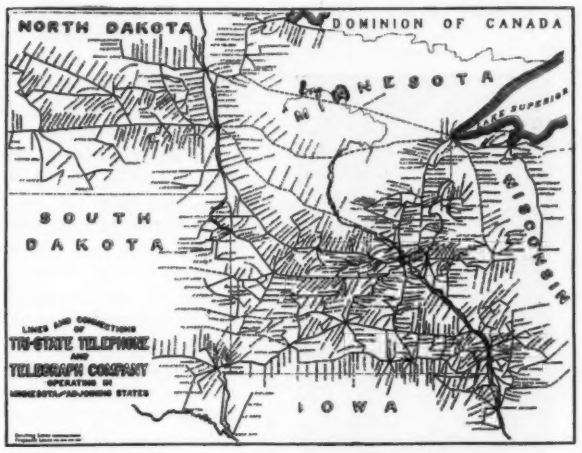
The applications of the present year have all been received since the new Rural Telephone Act, empowering rural telephone companies to raise money by the issue of debentures, came into force on March 1. This year's applications are equal to one-half of the total received during the previous four years, the whole period during which the provincial system had been established, and are as large as the total of the past two years. From the time when the Saskatchewan system was taken over by the Government to December 31, 1912, the total increment of rural services was 8,000. When the proposed new companies have all been organized and the immediate requirements of the communities affected have been met, there will be a total of 12,000 services installed throughout the length and breadth of Saskatchewan.

Previous to the present season, the year of greatest activity in rural telephone organization was 1911, when 110 companies were organized. Last year the total was 81, representing 1,400 new services. The companies which are being organized this year will be on the average much bigger, and will provide for much more comprehensive plans of construction than those of any preceding period. In addition to the applications now on hand, the department has received some hundreds of inquiries, which in the very near future are likely to result in actual applications for organization.

The Rural Telephone Act, under the terms of which all the new companies will be organized, removed one of the greatest obstacles to a progressive telephone policy in the rural areas. Until the present act came into force it was necessary for the farmers to provide during one year the whole of the cost of construction of lines and internal installations. They are now given the right to issue debentures repayable within 15 years for sums equal to the whole of the cost of construction.

Income Statement of Tri-State of St. Paul.

The Tri-State Telephone & Telegraph Co., of Minneapolis and St. Paul, Minn., has 3,000 miles of toll lines serving a population of over 2,000,000 people including 17 important cities in Minnesota, five in North Dakota, five in South Dakota, five in western Wisconsin, three in Iowa, one in



Map of Toll Lines and Connections of Tri-State Company.

Nebraska and 1,100 other exchanges and toll stations. An idea of the extent of the company's system may be had from the accompanying reproduction of a map of the company's lines.

The Tri-State company has issued its income statement for the six months ending June 30, 1913. This account, which is compiled under the accounting system of the Interstate Commerce Commission, is in the following form:

THE TRI-STATE TELEPHONE & TELEGRAPH CO.

INCOME STATEMENT.

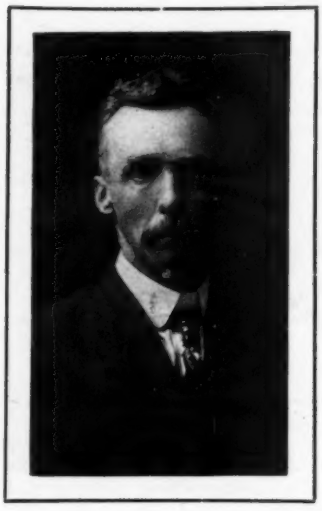
For Six Months Ending June 30, 1913.

Compiled Under Accounting System of Interstate Commerce Commission.

Telephone operating revenues		$760,010
Telephone operating expenses		361,040
		$398,964
Less depreciation of plant and equipment.		75,000
Net telephone operating revenues		$323,964
Other operating revenues		598
		$324,562
Other operating expenses	$ 55	
Reserve for uncollectible operating revenues	7,573	
Reserve for taxes assignable to operations.	30,266	37,784
Operating income		$286,778
NON-OPERATING REVENUE.		
Dividend revenues	$ 8,534	
Interest revenues	1,149	9,683
		$296,461
DEDUCTIONS FROM GROSS INCOME		
Rent deductions for lease of telephone offices	$ 4,455	
Rent deductions for lease of conduits, etc...	467	
Interest deductions for funded debt.....	33,154	
Other interest deductions	5,165	
Amortization of debt discount and expense	17,103	60,344
Net income		$236,117
Dividends paid on common stock	$120,000	
Dividends paid on preferred stock.....	60,511	180,511
		$55,606
Surplus January 1, 1913.....		315,000
Balance available for surplus June 30, 1913		$370,606

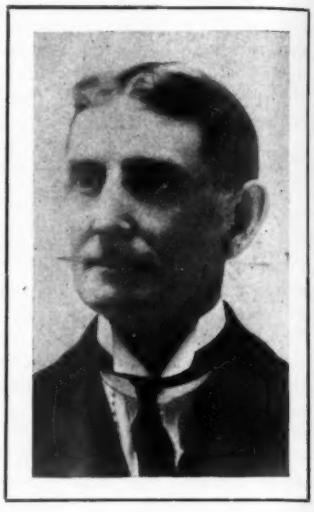
A Quartet of Men Prominent in the Telephone Field

F. A. DAVENPORT, president and manager of the Belmont Telephone Co., Belmont, Iowa, was born in Massachusetts in June, 1859. His parents removed to Madison, Wis., two years later and in 1865 removed again to Belmont, Iowa. Mr. Davenport was educated in the common schools and grew to manhood on the farm. He began teaching school at 19 years of age. After teaching 10 years he purchased the farm where he now lives, married in 1890, and went to farming and raising pure bred stock. In April, 1910, a stock company with capital stock of $20,000 was organized for the purpose of buying and operating a local telephone exchange at Belmont and Mr. Davenport was made one of the directors and in the following January was made president of the company. During the past two years he has also served as secretary. The physical condition of the purchased property was poor but is being continually improved as income permits. Mr. Davenport is a director of the Farmers' Mutual Insurance Co., and a director of the First National Bank of Belmont.

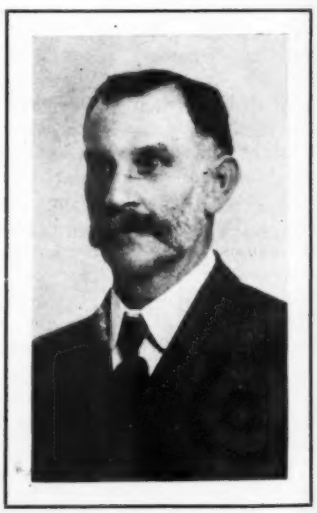


M. B. LARIMER, president of the Protective Electrical Supply Co., Ft. Wayne, Ind., was born at Millersburg, Ind., in January, 1878, and was educated in the high school at Goshen, Ind. He entered the telephone field immediately after finishing school, in 1894, as manager of the plant of the Bell telephone company at Goshen, Ind. He left this company in 1896 and entered the Independent field with the Home Telephone & Telegraph Co. of Ft. Wayne, Ind., serving as inspector, troubleman, lineman and manager of one of the exchanges until 1897. He then removed to Henderson, Ky., and was connected with the Independent company in that city during its construction. In 1898, he returned to Ft. Wayne and served as superintendent and purchasing agent of the Home Telephone & Telegraph Co. until 1909. He rebuilt the Independent plant at Ft. Wayne, making it a complete cable plant. He designed and placed on the market the protective can top cable terminal, and organized the Protective Electrical Supply Co., of which he is president. He started this company in a new field and has built up a good business. He is a Mason and an Elk.

JAMES F. BARNETT, owner of The Barnett Telephone Co. of Rutledge, Mo., was born on a farm in Scotland county, Mo., in July, 1865. He was educated in the public schools, and at the State Normal School, Kirksville, Mo. He left the farm in 1886 and spent a number of years as a commercial traveler. He entered the telephone business in 1902 by building the system of the Barnett Telephone Co., Rutledge, Mo., as well as exchanges at Gorin and Bible Grove, which systems he owned. In 1906 he organized the County Home Telephone Co., Quincy, Ill., and in 1908 organized the Farmers United Telephone Co., of Panama and Bennett, Neb. He organized the Anderson County Home Telephone Co., of Garnett, Kan., in 1910. Mr Barnett was an organizer of the Missouri State Telephone Association in 1905, and served as traveling secretary. He has made special field work for the Independents a success in Missouri, Nebraska, Kansas, and Illinois and has served the Lincoln T. & T. Co., Lincoln, Neb., the Kansas City Long Distance Telephone Co., Kansas City, Mo., and others.



R. R. SCOTT, manager of the Farmers Mutual Telephone Co., Columbia City, Indiana, was born near Etna, Whitely county, Indiana, in November, 1857 and is of Scotch-Irish extraction. He was educated in the common schools and graduated from the school of practical experience. The principal part of his life was spent on the farm, and he yet retains the old homestead. In 1898 he assisted in the organization of the Wilmot Telephone Co., Wilmot, Ind., and served as secretary for three years. In 1903-04, he organized The Farmers Mutual Telephone Co., with main office at Columbia City, Ind. This company has had a phenomenal and healthy growth, it now having over 1,200 miles of wire, 263 miles of poles, 7,000 feet of underground work, five exchanges and 1,700 patrons. Beginning with $24,000 paid-in stock, by returning the accrued profits into building, on May 1, 1913, the company had over $98,000 invested in actual construction with plant in good condition of repair and a propitious future before it. Mr. Scott is a member of the Independent Order of Odd Fellows.



A Letter

A Good August Reminder—A Fair Protest

By J. C. Kelsey

"I take my 'typewriter in hand' to say that I have just read your weekly letter in TELEPHONY and want to say something about it. I haven't taken time to study the matter, and I suppose I ought to keep still, inasmuch as I always enjoy your letters and have received a great deal of information through them.

This time I think you have struck out, although nobody has a batting average of 1,000 and should not be criticised for missing once in a while. In saying this I appear to assume the role of judge and jury, which also is a failing that most people have sometimes.

But candidly, when you say, 'If a Chicago banker dislikes it, be sure that it is to your interest to like it,' you make a most *common error*, and a *very serious* blunder. This attitude of mind is a greater detriment to the logical solution of the currency and other public questions than all the combined opposition of trusts and monopolies. I often think of Bobbie Burns' line, 'What is not sense, must be nonsense.' If we want to get a correct opinion on this question, we must eliminate the nonsense that appears on both sides of the question, and that includes more than half that is written.

Now I claim that a banker is just as likely to know something about the banking and currency matter as anybody else, and I will say also that George Reynolds is as square a man as ever lived, even though he may be a banker. The bankers do not agree in what they want, because there are as many punk-headed men in banking as in any other line of business, although fortune may have smiled on most of them. In fact, some figure-head bankers whom I have seen, have allowed their brains to become atrophied from disuse.

Still, I am not going to agree with Mr. Reynolds. I think he is unduly alarmed. I will also dissent from your position, that we should all steam ahead without *waiting. Waiting* is the correct word now. At this writing good crops are not assured. In fact, this is the worst drought the United States has ever experienced, and crops will be poor.

As you say, 'Chicago people are borrowers,' and so are others, and the matter of borrowing has been largely overworked, hence the scarcity of money. The new currency law, if passed, is aimed to correct the conditions that make money scarce. It is to be hoped that the bill will pass, and that it will have the necessary banking experience in its making, so that it will not make business matters infinitely worse. At present, it seems to be intended to make a football of politicians. The Republican party should have given us currency reform and tariff reform years ago, but it failed in its duty and was retired from business. Now the Democratic party will try to do the work, and it is to be hoped it will succeed, but the present indications do not seem to encourage us to believe that it will.

I also will subscribe to the statement 'Upon no other agency does the prosperity of our people depend, than upon our banking system.' We have our railroads, telephones, factories, and thirty million horsepower at work for us, but underlying all this is our banking system. We make one dollar of real money do the work of at least one hundred dollars through our banking system. The bank is the very greatest of all our public servants. Then should we not consider, without prejudice or passion, what is best to preserve the good health of this public servant? And should we not keep the quacks away from its bedside?

Now, Mr. Kelsey, I have gotten to be so well acquainted with you by reading your letters, that I have written you his letter to ease my troubled breast. I am interested in Independent telephony, and have seen that the banks in the small places are nursing these institutions, and that generally, those that are worthy of credit are getting it. *A bank must keep faith with its depositors, and must not lose their money in bad loans.*

I think there is more real knowledge of finance among the good bankers than among the men of other lines of business. It is no trouble for us to judge of these bankers as to who is who. Some of them are honest as well as wise—they are known. If the administration would call the best of them into council, the new bill would be properly born. But as to Mr. Bryan, he is not a great man, never said nor did a great thing; is prejudiced and narrow-headed. He was not joking when he said he could not live on $1,000 a month, and I will agree with him that he can't. His expenses will be more than that, but we expect our public officers to live on their own means, and then accuse them of getting rich off the public. Mr. Bryan is honest and says what he feels, before his brain acts."

My articles have been appearing weekly in TELEPHONY for nearly four years.

I have been fair and unfair, just and unjust, kind and unkind, reasonable and unreasonable, right and wrong, simply according to the viewpoint. If I could go back those four years, and have it to do all over again, I would take to the woods and never be heard again.

I do get on lots of people's nerves. I have quite a list of them and expect to write them open letters some day when things get dull.

I was just four years younger than I am now, and I knew no fear. So I listened to the voice of the serpent and thought I would try writing for three months; then for the rest of the year; then another year. I suppose now I am a sort of a Prometheus!

"Fools rush in where angels fear to tread," and this theory may explain why I volunteered to delineate the telephone field, with its many dangerous curves, changing lights, colors and signals.

In the telephone business, each succeeding hour shows new features, just as the tall white Washington Monument responds to the varying tints and shades of the fleeting days and nights.

During these four years I have received many letters, some full of praise, others full of abuse.

Some of them so stinging hot that the fire extinguishers on the mail train were necessary to give them safe transit, and others so delightful that I have smiled for a whole week!

The letter this week is the best and most satisfying protest I have ever received. It comes from a source that has never before spoken. From a source from which I always wanted to hear.

In my experience, I know that on every board of directors of a telephone company there sits a banker. How we have feared this banker! And how we have accused him of ever being partial to the pressure of the large banks which carry Bell money!

Never a word has been spoken in self-defense. Simply the use of the most powerful weapon—silence, which every human dreads the most!

I have worked for bankers for years. I have advised them upon the condition of properties in almost every walk of electrical life.

I have seen them save properties and get so little thanks for their efforts, that I would not blame them for using

dynamite and I have seen them go into properties which had no hope, and bring them back to health.

No one believes any more than I that "upon no other agency does the prosperity of our people more depend, than upon our banking system." Yet during the last years, I must admit to the growth of some cynicism—forced upon me by seeing so many examples of cowardice. Where men have been threatened by telegrams and letters, and frightened into doing things at which their Americanism revolted. In so many cases, the wire chief seems to be the only one able to act without fear, the most fearful of all being the banker!

I have heard a great deal about hard-headed business men. But put them on a board of directors of a public utility company and they are anything but "hard-headed" as a rule.

As long as a druggist is behind his drug counter, he is as bold as a lion. The grocer in his store, the lawyer in his office, and the doctor in his, are examples of strength and sturdiness.

But let them get together to decide upon a policy, or the purchase of a switchboard or dynamo, and you have a different attitude.

Collectively, they are not dependable. Individually, each is a tower of strength, truth and honesty. It is all very human.

Combating these phases of human nature has given me the habit of cynicism.

It does a man good to be awakened from any ingrown attitude. If he is allowed to go on undisturbed, he is likely to be so utterly distorted that one can not recognize him.

We are all a great deal as a tree, because we need careful pruning in order to grow up straight and be properly proportioned to bear our burdens.

"What is not sense must be nonsense." This line of Bobbie Burns must be framed on the basis of "if you are not for us, you are against us."

There certainly has been more nonsense than sense shown so far in the discussion of currency. It seems that financial men, themselves, can not agree on a proper currency plan.

That is the greatest nonsense of all. But why expect financial men to agree, when no other human agency agrees? Not even the doctors, nor the preachers, either.

I certainly agree that bankers are just as likely to know something about the currency matter as anyone else.

I certainly agree that Mr. Reynolds is a square man, and a wonderful one. He came from Iowa, and he doubled and tripled the deposits of a Chicago bank which was then thought to be awful big. He understands our Middle West.

He has been in consultation with President Wilson at Washington, and he will undoubtedly be on the reserve board.

I do not like to hear any man say that he will not play, just because others want another game.

For a banker, particularly, to say that the currency bill will drive his national bank, as well as all other national banks into state charters, is childish. No one knows better than the present administration that there is an amendment to our constitution, which protects life and property from confiscation.

The American people, also are fearfully and wonderfully tolerant, and patient, too.

We are going ahead full steam now. Just how long it will keep up, I do not know.

There is a reckoning ahead, of course, but it will not do in this short life, not to make speed when the track is fast.

Human beings are here for such a little time. We strut across the stage; some speak a word, most do not, and then are seen no more.

It seems almost ridiculous to fear anything!

It is a fact that Kansas and Nebraska are experiencing droughts. The rains seem to have fallen almost everywhere else.

The corn crop will be short, but as you look through the other states, you can really see no use in waiting.

The Illinois farmer was complaining about the crops. Some one suggested that the crops of the three preceding years had been very abundant, and that he had received good prices, but he was disconsolate.

He said that the crops might have been good, but they impoverished the soil too much! He was simply bound to kick.

But going back, I am going to repeat. I am glad to get such a letter! And glad to know that I "struck out." Even heavy hitters do that, frequently, but the audience does not excuse them.

I do plead guilty of some impatience with the banking fraternity.

Not the banker of the medium-sized community, who knows his business and who owns farms, and stocks and bonds in the local utilities. But with the big banks who presume to send out telegrams, telling people what to do, interfering with something they know nothing about, but with all the impudence possible.

Big banks are human, naturally, because they are controlled by human beings. But some banks have such puffed up heads, that they are impossible!

I have seen these bank telegrams, and, if I had my way, I would soon lead that banker out at sunrise and shoot a little real Americanism into him.

This condition may be local to the telephone business. It may be that New York banks do not send out telegrams, urging boards of directors to buy General Electric apparatus.

But I do know that they have sent out threatening telegrams to telephone companies, urging them to buy from the Bell factory!

It is wrong, undoubtedly, to blame all the banks for the petty actions of some New York and Chicago banks. But even King David, in his wrath, said all men were liars!

In my wrath, I accuse all bankers—wrongly, of course, as did old David. I possibly have covered too much territory.

I do hope I will have more judges and juries to sit upon our case. If we could get a judge and jury to go over telephone conditions, I believe they would get indignant over those banking telegrams.

I don't believe they would think it very brave for the Bell company to keep its purchasing field to itself, and then send out its factory to try to divide the business with others.

Real Americanism does not believe in shooting unarmed men, or birds, unless they are on the wing.

Some day they will awaken to the fact that this wrong

is not only a moral one, but an expensive one. It is only expensive wrongs that some concerns will right.

MORAL: The innocent often suffer with the guilty.

Resolution of Inventors' Guild on Patent Reform.

Under recent date the Inventors' Guild circulated a set of resolutions urging the co-operation of chambers of commerce and similar bodies throughout the country in securing the appointment of a patent commission to study the whole subject and report. The resolutions are as follows:

"Whereas the fact that certain trusts and large corporate manufacturers have been accused of using patents improperly, both offensively and defensively, to aid them in effectually stifling competition, has resulted in the introduction of bills before Congress intended to regulate such abuses by making radical changes in the United States patent system;

Whereas the hearings on the Oldfield bill (H. R. 23,417) in the spring of 1912, demonstrated that there were marked differences of individual opinion among inventors, legislators, manufacturers and patent lawyers as to the changes in our patent system which would be desirable to subserve the best interests of the United States;

Whereas there is now pending before the Sixty-third Congress in the House of Representatives a bill (H. R. 1700) introduced by Mr. Oldfield, representative from Arkansas, which provides for radical changes in the United States patent system fraught with the most serious consequences to the people of the United States, and especially to independent and competitive manufacturers and inventors;

Whereas the intention of the United States Constitution to stimulate the publication of valuable inventive thought by granting and securing an exclusive right to the inventor who first publishes his invention through the agency of a patent of the United States seems to have been lost sight of in said Oldfield bill (H. R. 1700), and said proposed law would tend to reduce instead of tending to increase the creation and publication of inventions valuable to the people of the United States;

Whereas President Wilson has recently given warning to the people of the United States of the importance of these questions in the following language:

'Do you know, have you had occasion to learn, that there is no hospitality for invention nowadays? . . .

'I am not saying that all invention has been stopped by the growth of trusts, but I think it is perfectly clear that invention in many fields has been discouraged, that inventors have been prevented from reaping the full fruits of their ingenuity and industry, and that mankind has been deprived of many comforts and conveniences, as well as the opportunity of buying at lower prices. . . .

'One of the reforms waiting to be undertaken is a revision of our patent laws.' *

Whereas the Inventors' Guild, composed exclusively of independent inventors, petitioned President Taft on Nov. 24, 1911, for his aid in securing the appointment of a patents commission to investigate and report upon the subject of possible improvement of the patent system for the benefit of the United States;

Whereas the various chambers of commerce in the principal cities of the United States are fairly representative of all the interests concerned in this matter, including manufacturers, inventors, and the people generally;

Be it resolved, that the Inventors' Guild does hereby invite each of the chambers of commerce and similar representative organizations throughout the United States to aid the Guild in its efforts to secure the appointment of a patent commission by urging the Congress of the United States that it provide for such a commission made up of unbiased, independent, non-partisan men of such national standing as will command the respect and confidence of the whole country, chosen from different walks of life and serving without pay. Said commission to hold public hearings and otherwise, as may appear to it best, to make a thorough and careful study of the American patent situation, and to prepare and submit a comprehensive report and recommendations to Congress for such changes as may, as the result of its study, appear to it expedient, whether in the patent office, in the method of court procedure, or in the organic patent law, and to submit recommendations as to the legislation it would propose for effecting such changes. And the Guild further requests the several chambers of commerce to urge the Congress that it make ample provision for the expenses of such a commission, and that it hold in abeyance all proposed legislation affecting the patent system in whatsoever way until such time as the said commission shall have had ample opportunity to hold the said hearings and make the said study and report."

*The "New Freedom," in World's Work, 1913.

Telephone Men in A. I. E. E.

The August issue of the Proceedings of the American Institute of Electrical Engineers reports that the following telephone men, recommended by the board of examiners, were transferred to the grade of fellow at a recent meeting of the board of directors: Henry Linton Reber, vice-president and general manager of the Kinloch Telephone System, St. Louis, Mo., and J. G. Wray, chief engineer, Central group of Bell telephone companies, Chicago, Ill.

At the same meeting the following associates were transferred to the grade of member in accordance with the special section of the constitution: George A. Campbell, research engineer, American Telephone & Telegraph Co., New York; Chas. H. Gilbert, supervisor of traffic, American Telephone & Telegraph Co., New York; Leslie H. Jenks, general superintendent, Northwestern Telephone & Telegraph Co., Carthage, N. Y.; Arthur Bessey Smith, consulting electrical engineer, Automatic Electric Co., Chicago, and Geo. J. Yundt, chief engineer, Southern Bell Telephone & Telegraph Co., Atlanta, Ga.

The following were elected as associate members of the Institute: W. R. Pearce, plant superintendent, Alberta Government Telephones, Edmonton, Alberta, and Grover Tagholm, construction foreman, Western Electric Co., Chicago.

Michigan Commission to Investigate Detroit Service.

According to a statement made last week by Lawton T. Hemans, chairman of the Michigan Railroad Commission, inspectors are to be sent to Detroit at once, to investigate complaints of the telephone service.

The commission has several telephone experts who will be turned into the field for the investigation.

They will first ascertain the scope of the situation and later take measures to trace the trouble and correct it.

Labor Commissioner Investigating Hours of Operators.

State Labor Commissioner Cunningham of Michigan is visiting offices of the telephone companies in the state with the intention of determining whether women employes are employed more hours in the day than the state labor law allows. Commissioner Cunningham says the telephone companies must obey the law as well as the factories.

Berkley, Calif., Controversy to State Supreme Court.

The Supreme Court of California will pass on the merits of the controversy between the city of Berkeley and the Pacific Telephone & Telegraph Co., relative to the forfeiture of the bonds of the Home Telephone Co. when it was merged into the Pacific company. City Attorney Staats has filed notice of an appeal from the decision of the superior court favoring the corporation.

The Passing of "Rags".

Dr. J. C. Martin, a prominent physician of Findlay, Ohio, had a remarkable dog, "Rags," which recently succumbed to the ravages of age. Each night it was Rags' custom to sleep at the telephone and at the ringing of the bell he would dash into his master's room and awaken him by barking. "Rags" never failed in his duty and he will be greatly missed.

The Laying of a Thirty-Mile Submarine Telephone Cable

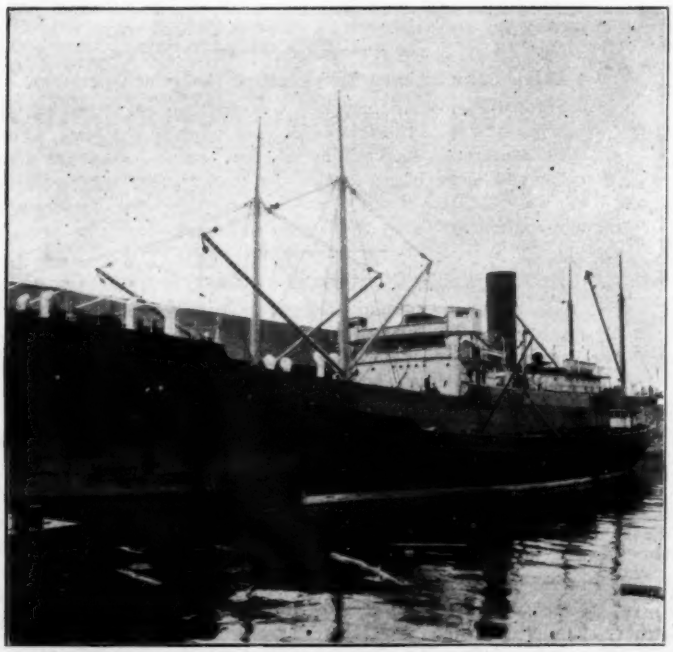
Story of the Handling of Long Cable that Was Laid at a Great Depth in the Gulf of Georgia, Graphically Told by Illustrations—Description of Cable and Its Connections—Reproduced Through Courtesy of Telephone Talk

British Columbia has many records to its credit in connection with its progress, and the latest has attracted the attention of electrical experts the world over. It is the laying of the new submarine telephone cable across the Gulf of Georgia, between Point Grey on the mainland and Newcastle Island, lying opposite Nanaimo and just off the eastern coast of Vancouver Island. The length of this cable between terminals is 32.6 statute miles, being in one continuous piece, while it is laid at a maximum depth of 1,380 feet. This cable is the longest submarine telephone connection of its kind, and with two exceptions is the longest continuously-loaded cable in existence.

The successful laying of the cable marks an era in submarine telephone, as it is laid in deeper water than any other loaded cable. The "Anglo-Belgian Cable," although considerably longer, is in shallow water and is coil-loaded, a type of construction that was not considered safe for the deep waters of the Gulf of Georgia.

Telephone communication between Victoria, the capital, and Vancouver, the great commercial centre of British Columbia, is taken so much as a matter of course by the people of those cities that they hardly think of the time when it was not possible. Yet the cable which has been used in the past was laid less than 11 years ago, having been put down in October, 1902. That was before the day of long submarines, which have been made possible by recent inventions, such as the Pupin coils and continuous loading. These devices, while not new, have been well proven out in recent years. With Pupin coils, the inductance, giving better transmission, is lumped, the coils being placed at regular intervals, while with continuous loading, the inductance is distributed the entire length of the cable. The continuous loading system which is used on the new Gulf cable, was devised by Krarup, a Danish telegraph operator.

Cable House at Point Grey, the Main Land Terminal.



"Crown of Galicia," with the Cable Ship, "Princess Louise," Alongside.

A rather long-about route was employed to reach Vancouver Island by telephone previous to the laying of the new cable. The line went via New Westminster to Bellingham, thence to Lummi Island, Orcas Island, Shaw Island, San Juan Island and across to Victoria, necessitating five sections of submarine cable. The longest of these was ten miles. Not only did this line carry the traffic between Vancouver Island and the mainland, but it was also used for communication between Victoria and points in the state of Washington.

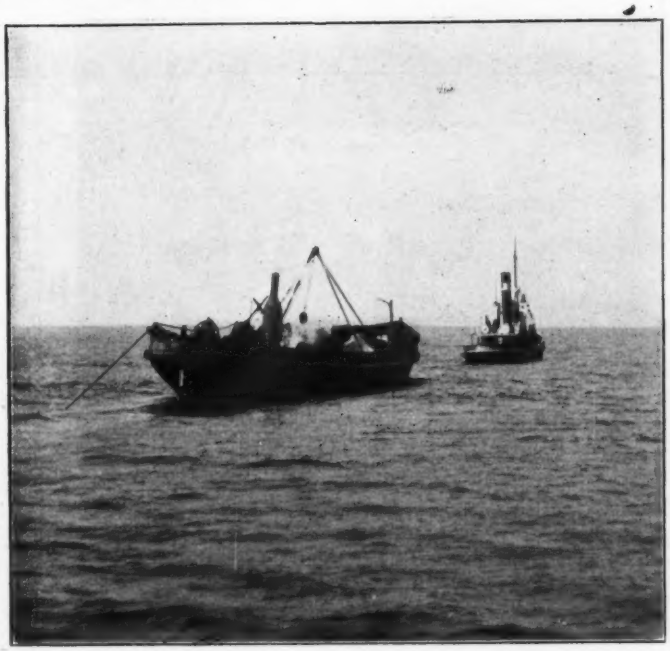
Because of the length of the route and varying conditions, transmission between points on Vancouver Island north of Victoria was not satisfactory. For that reason it was planned to lay a cable along the most direct route possible. Now the line runs straight across to Vancouver Island from Vancouver, and goes down to Victoria from Nanaimo, connecting with intervening points. It also goes north to Courtenay, Cumberland and Comox, as well as west to Alberni. Thus every point on the Island is brought in as close touch with the mainland, as far as telephone communication is concerned, as is North Vancouver with Vancouver.

To secure utmost efficiency of the new cable, new copper circuits were strung by the British Columbia Telephone Co. between Nanaimo and Victoria, using the most direct route, which called for another section of submarine cable across Saanich Inlet. This, however, was only 2½ miles in length. It contains

ten pairs of wires in comparison with two pairs in the big cable, the increased number being necessary to take care of inter-island talking traffic. In addition, copper circuits were established on the mainland between Point Grey and the Seymour exchange of the company. A feature of the aerial construction is the highest telephone poles in the province, erected at the Brechin Mine at Nanaimo, and the two on Newcastle Island, immediately opposite.

The first mentioned poles are over 100 feet out of the ground while those on Newcastle Island are 70 feet in height. The four poles carry a span 1,000 feet long, the lowest sag of which is 100 feet above high water. In raising the highest poles a tree, which fortunately stood on the spot, was used as a jig pole and to it a pulley was fastened, 70 feet above the ground. A rope tackle was run through the pulley and attached to the pole just above the middle of its weight. The pole was then raised into position by horse power. These poles cost $200 each to put into place, while the cost of the whole new route, cable and all, is nearly $250,000.

Ordinarily, one looks at a figure of this kind merely as a statistic. It has a greater value when it is remembered that this is an extra expenditure, made so that a better service can supersede that which has served all purposes in the past, but which is now inadequate. Public service corporations, above all others, must keep closely in touch with progress, and to this end their commercial and plant engineers are constantly in the field. They are aware of expansion, perhaps before provincial authorities and plans are always prepared in advance of the time when service may be required. So, when an expenditure of nearly a quarter of a million dollars is made on a long distance line of communication, it indicates progress and expansion in the districts which are served by the utility.

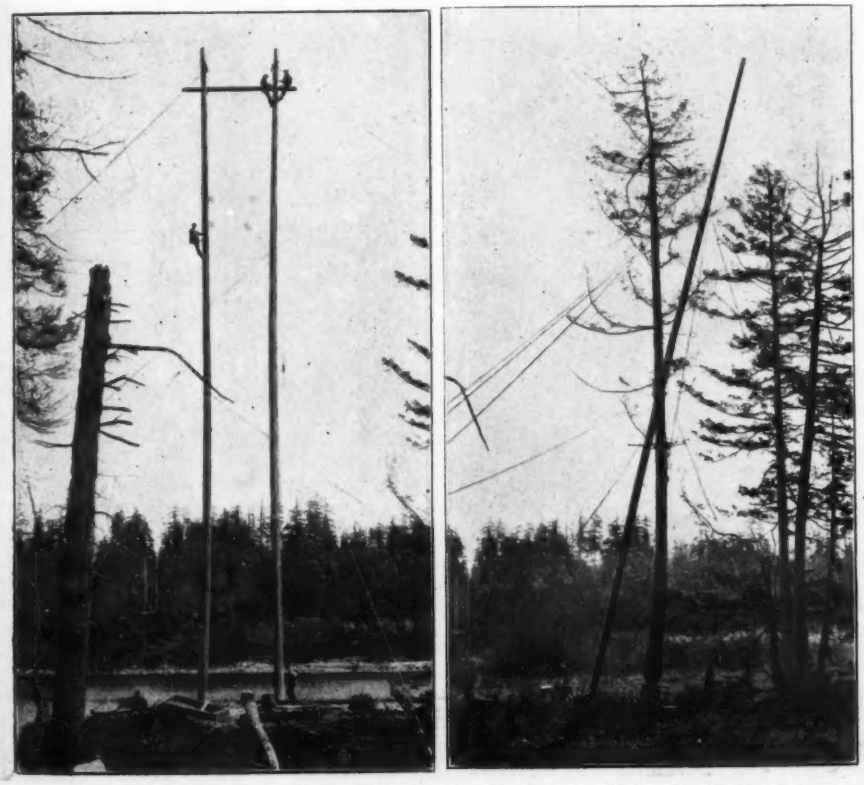


Laying the Submarine Cable Across the Gulf of Georgia.

The shore ends of the submarine cable terminate in cable huts, where connection is made with the land lines to Vancouver and Nanaimo. Protection from lightning is afforded by dischargers of the Lodge-Muirhead type, consisting of a graduated system of spark gaps alternating with impedance coils between the land lines and the cable. The sparking points are mounted radially around the edge of a metal disc which is grounded. The apparatus is mounted in sealed iron cases, the leads entering through air-tight glands.

W. T. Henley & Co. of London, England, were the makers of the big submarine, and it was under process of manufacture for something over seven months. There are four copper wires, known as conductors, in the cable, every one of the continuously loaded type. Each conductor consists of a central wire of pure annealed copper surrounded by 12 smaller wires, the composite conductor having a diameter of 0.139 inch and a weight of 300 pounds per nautical mile. A single, soft iron wire of special manufacture with a diameter of 0.12 inch is closely and evenly wound on the conductor making 70 turns per inch. This provides the loading, a continuously distributed inductance which adds so materially to the transmission efficiency of the cable for telephone purposes.

The loaded conductor is covered with three concentric coatings of best guttapercha having a total weight of 300 pounds per nautical mile. Four of these cores are stranded round a centre of yarn,

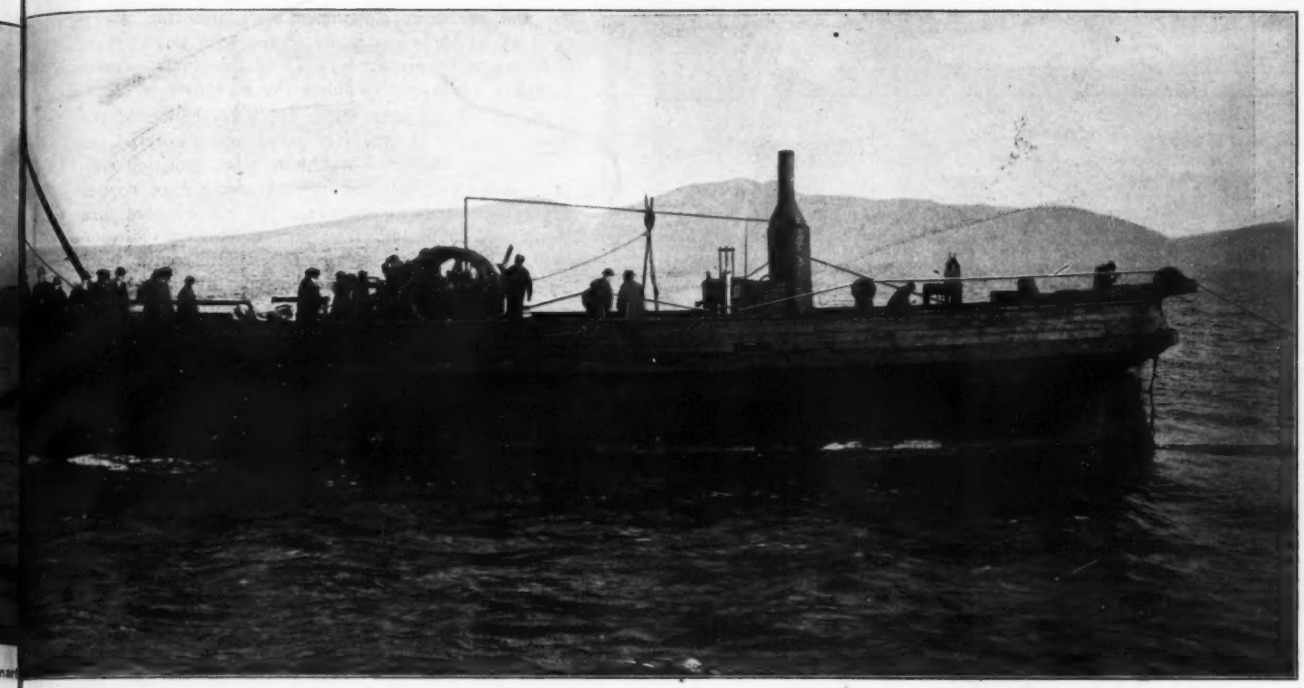


Highest Telephone Poles in Province of British Columbia, Showing Method Used in Raising Them.

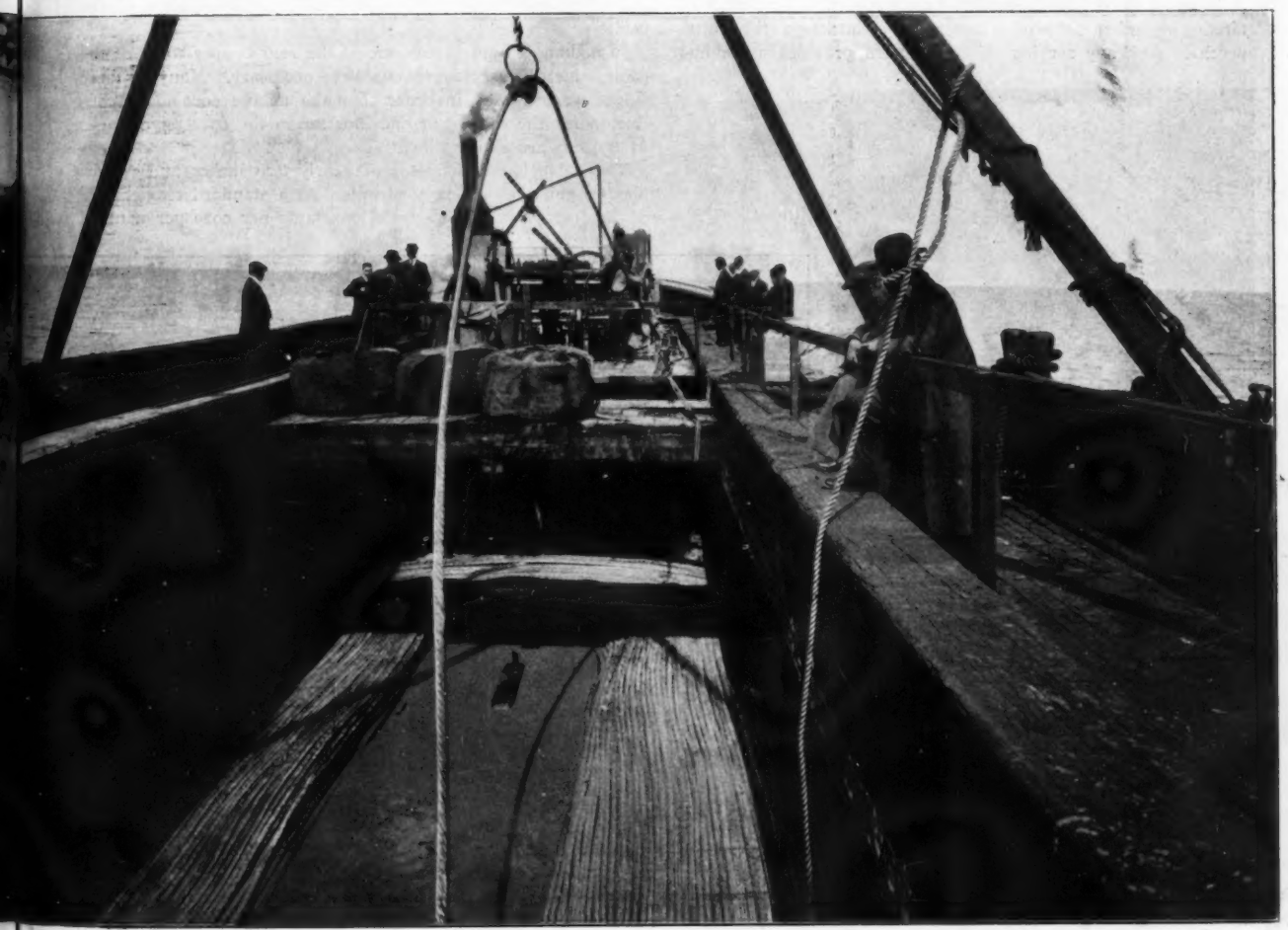
Arrangement of the Cable After it Was Transferred to the Hold of the Cable Ship, "Princess Louise."

Taking Ashore the Point Grey End of the Gulf of Georgia Submar Cable at Four O'clock in the Morning.

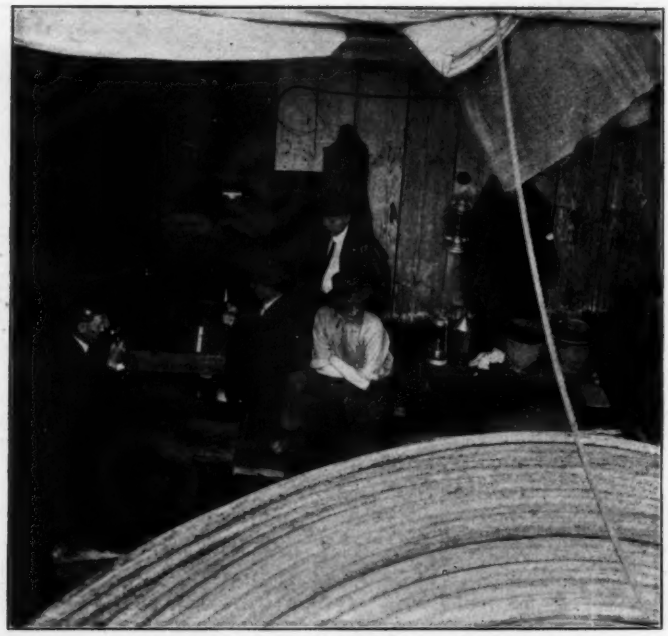
Cable As it Lay 12 Feet Deep in Steel Tank in the "Crown of Galicia"—The Tank is 25 Feet in Diameter.



Ship in Operation, Showing Cable Passing from the Hold, Throug h Cable Drum, Then Through the Dynamometer, and Out Over the Stern.



The Submarine Cable Coming Out of the Hold of Cable Ship, View Looking Toward the Busy End of Vessel.



Continuous Tests Were Made in Hold of Cable Ship.

the interstices between the cores being filled with tarred yarn. A layer of brass tape is provided to prevent the possibility of teredos or other submarine borers from attacking the gutta-percha. A heavy serving of tarred yarn provides a bedding for the 15 heavy galvanized steel armoring wires, each of which is separately served with tarred yarn. Two layers of prepared yarn and two coats of preservative compound complete the construction.

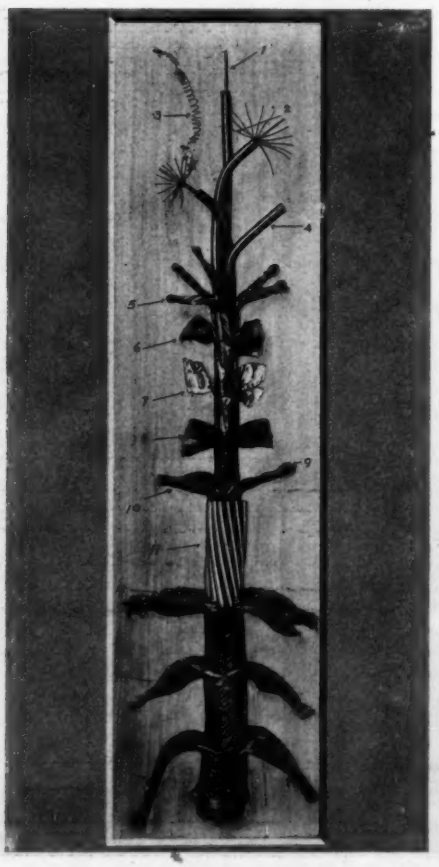
In one of the illustrations the construction of the cable is clearly shown. The solid copper core of the conductor is shown at 1. At 2 the composition copper conductor, including the 12 small gage copper wires that are wrapped about the copper core, are shown. What is known as wire lapping, is indicated by 3. This is a fine gage soft iron wire continuously wound around the copper and it constitutes the loading feature of the cable. The composition core, including the guttapercha insulation, is shown at 4.

The jute worming is denoted by 5. It is laid between the conductors to form a solid and cylindrical core of the four conductors. At 6 is shown the saturated tape which binds together the conductors and the jute worming. The continuously wound brass tape is shown at 7. Another saturated tape winding is indicated by 8.

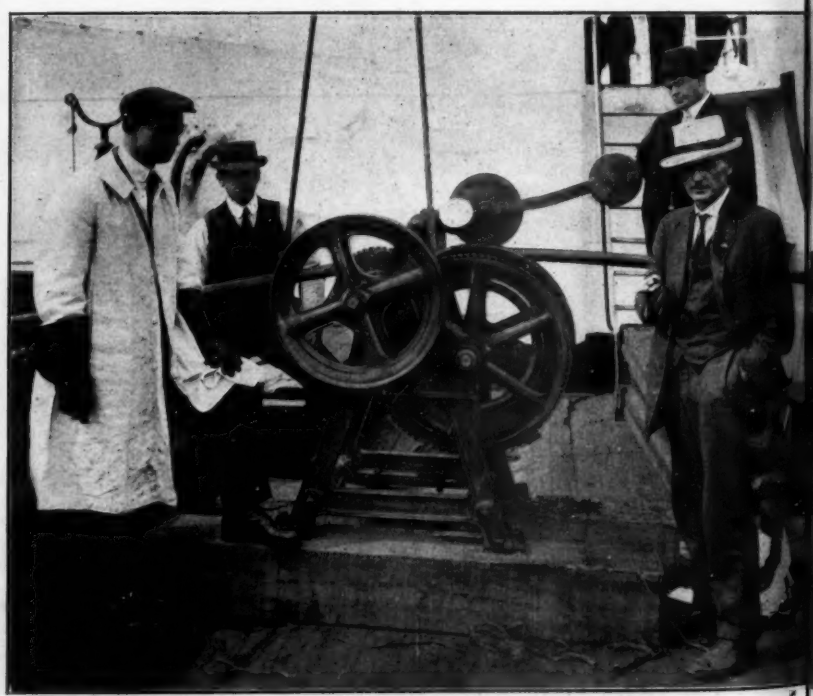
The jute servings that form a cushion for the armor wires is seen at 9 and 10. The armor wires, 15 in number, each 3/16 inch in diameter, are denoted by 10. Jute worming is laid between the turns of the armor wires and affords a cushion protection to them. It also rounds out the form of the cable. This worming is seen at 12. At 13 and 14 is shown the jute servings, wrapped in reverse directions to hold on to the worming beneath, and to complete the cylindrical form of the cable.

In making a joint in any one of the four copper cores of the cable, nine different operations were necessary. Many of these joints were needed in order to make up the continuous conductor for the cable. In one illustration the successive stages of a joint are shown.

The cable has a diameter of nearly two inches and weighs about eight tons per nautical mile. At a standard temperature of 75 deg. Fahr., the electrical constants per core per nautical

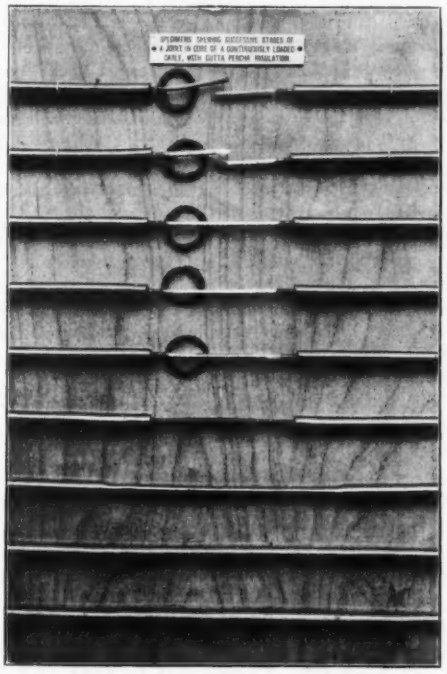


Constructional Details of the Cable.



Unloading the Cable From the "Crown of Galicia," Which Conveyed it From England

mile are: Conductor resistance, 4 ohms; electrostatic capacity, 0.35 microfarad; and dielectic resistance, 250 megohms after one minute's electrification. The attenuation constant is about 0.019 per nautical mile of cable at a frequency of 800 cycles per second.



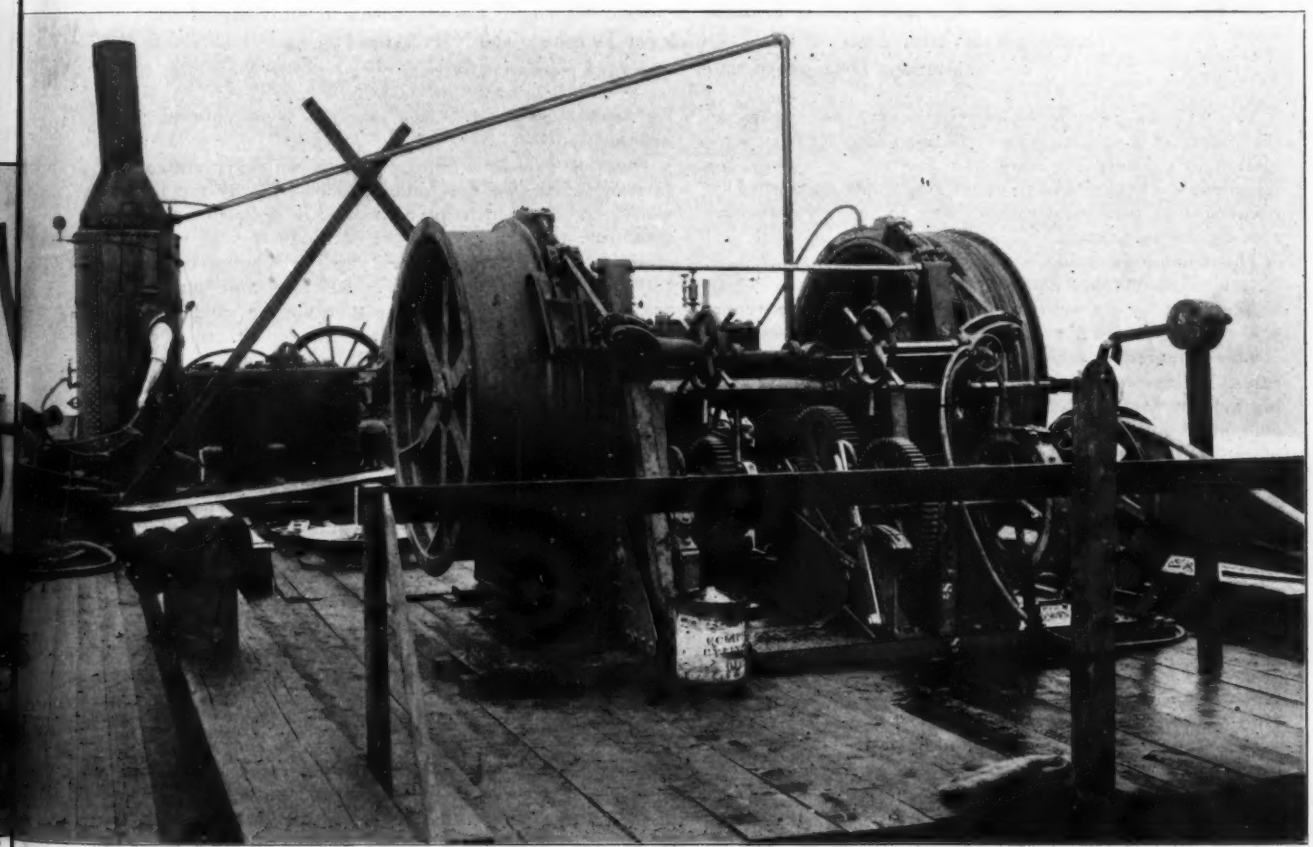
Successive Stages in Making a Joint.

Compared with the British standard cable, which consists of a pair of conductors having a resistance of 88 ohms, a mutual capacity of 0.054 microfarad and an attenuation constant of .103 per statute mile, this loaded cable is 6¼ times as good. If compared with the American standard cable which has a capacity of .06 microfarad per mile, the result is correspondingly better. Actual speech transmission tests, taken upon completion of manufacture and also after laying, give a ratio of 5½ times, which is a very close confirmation when the losses by reflection and the personal errors of observation incidental to these tests, are considered.

The four conductors provide two highly efficient physical circuits, a third circuit being phantomed for local traffic without appreciable cross talk. In addition, four telegraph circuits will also be maintained, all operating simultaneously without interference. It is proposed to devote one telephone circuit to business originating out of Nanaimo, which will include traffic from the small towns to the north and west and for a short distance south. The other two circuits will be required for business between Victoria and Vancouver.

The cable arrived in Vancouver on May 31 on the Harrison liner, Crown of Galicia. It was stowed in a specially constructed steel tank, 25 feet in diameter and 12 feet deep, and was kept immersed in fresh water throughout the voyage in order to protect the insulation from the heat during the long trip from Great Britain. By means of a hand unloading gear, rigged for power, the cable was transferred from the ocean liner to the cable ship, Princess Louise.

It was a coincidence that this old steamer, which in the early days of transportation across the Gulf of Georgia made history by her trips between Victoria and Vancouver, should



Laying Out and Picking Up Machine, Specially Manufactured for Laying the Cable—The Two Huge Drums and Controlling Gear Are Plainly Seen.

in these latter days again make history in holding the cable which marks a new era in communication between these two portions of the Province of British Columbia, which are so intimately connected.

Unloading the cable required great care, yet transferring it to the hulk occupied only 23 hours, a creditable piece of work. It was handled by means of a hauler brought out with the cable, and which was operated by power. On this hauler was an automatic gage which registered the number of feet as the cable was pulled through. As it descended into the hulk over pulleys, it was taken in hand by several men who directed it into coils and safely packed it away. This work was undertaken by the Pacific Coast Cable Co., under the direction of Capt. A. B. Richardson, and was supervised by C. F. Bollschweiler, general superintendent of plant, and Geo. McCartney, superintendent of construction.

Laying of the cable was also done by the Pacific Coast Cable Co., a Vancouver concern. It was owing to the excellent work of this company that the long strand was successfully laid without a hitch on June 16.

The cable ship, Princess Louise, was towed across the Gulf of Georgia by the tug Dola and two other tugs assisted as tenders. Several of the illustrations give details that show clearly how the cable was laid. From the hold of the cable ship, the cable was brought up and passed over and under running blocks to the big paying out gear located near the center of the vessel. Three turns of the cable were made around the huge drum, thereby effectively braking it. The cable next passed through the dynamometer which registered the tension, thus to determine the rate at which the cable should be payed out, the medium tension being 2,400 pounds. After passing through the dynamometer, the cable passed out over the stern into the water.

It all sounds easy reading of the accomplishment in print, but it was an anxious day for the principals. There were many possibilities for accident, but these were averted by constant and careful supervision not only by the laying company's officers but by plant officials of the British Columbia Telephone Co.

An anxious man was Henry Savage, of London, representative of the manufacturers. Mr. Savage came to the Coast to attend the cable laying, so that he could personally report its efficiency. During the whole day, from early dawn, for a start was made from the dock at 2:30 a. m., until dark, when the shore end on Newcastle Island was connected up, he was constantly engaged in making tests. "Experts all over the world are watching the results of this cable," Mr. Savage said, "for not only is it one of special manufacture, but it is laid at a great depth." The water pressure on the cable at its greatest depth is over 500 pounds to the square inch, which is about three times the pressure of an ordinary steam boiler.

The end of the long day saw a satisfactory conclusion of the operation, and after passing through a number of light rainstorms the cable ship anchored, with her two tugs, under the arch of an auspicious rainbow which stretched its multi-colored span over the entrance to Nanaimo Harbor.

Committee of Florida Association Makes Report on Rates

Final Report of Committee Approves Previous Tentative Schedule Naming Rates that Ought to be Charged by Exchanges of Various Sizes—Number of Calls per Telephone and Not Cost of Placing Instrument Determines Unit of Expense of Rendering Service

The Florida Telephone Association has just published the report of a special committee appointed by that association to consider the rates that ought to be charged by telephone exchanges and to adopt a schedule applicable for exchanges of various sizes operating in the territory covered by the association.

The committee made a partial report as long ago as November, 1911, and adopted a tentative schedule which is sustained by its subsequent investigation. The report says:

Your committee, appointed to consider the question of rates, having made a partial report at the special meeting held at Sanford, November 28, 1911, believing that the committee should set forth some comprehensive statement of the facts and basis of their findings for the consideration of the association, as well as the telephone interests generally throughout the state, desire to say:

The committee finds no reason to change the rates proposed in its partial report which are as follows:

	Residence.	Business.	Party Residence.	Party Business.
250 or less telephones...	$2.00	$2.50	$1.50	$2.00
250 to 500 telephones....	2.00	3.00	1.50	2.50
500 to 750 telephones....	2.50	3.50	2.00	3.00
750 to 1,000 telephones...	3.00	4.00	2.00	3.00

Extensions: 500 or less telephones, wall sets, $1.00; desk sets, $1.25.

500 or more telephones, $1.50.

Local conditions in individual cases may justify a departure from this schedule. Indeed it would be impossible to find a schedule of rates which would meet the varying conditions for all of the telephone exchanges throughout the state.

There is probably no commodity which is utilized by so many of the general public and paid for by them about which there is so little understanding of the elements which enter into the expense of cost of production as telephone service. Nearly every one who uses telephones is familiar with the fact that the charges for telephone service are greater upon a large exchange than upon a small one, but few understand the necessity for this, and there is confusion in the minds of the general public as to why this is a necessity. There has, accordingly, developed a general impression that somehow the telephone business is different in this respect from all other business.

The difficulty lies at the very threshold of the subject. The general public seems to assume that the telephone located on the wall, or standing on the desk of each subscriber is the unit of cost of the commodity which the telephone company is selling, and herein lies the error. The telephone is not the unit of expense, but the number of calls per telephone determines the expense of rendering the service for which the subscribr pays. By analogy the conditions are very similar with a telephone to that of a water pipe or an electric light wire leading into the premises of a consumer.

The placing of the water pipe or the electric light wire does not determine what it will cost the company to serve the patron, but the number of gallons of water which the company is required to pump through the pipe for the use of the patron, or the amount of electric current which the company generates, and causes to flow through the wire for the use of the patron.

The only real difference is that in the case of water and electric current the patrons may determine the expense by the use he makes of the water or light, while in the case of the telephone, the size of the exchange determines the average number of calls per telephone, which rapidly increases as telephones are added to the exchange.

It is not true that the telephone business differs in this respect from any other business. It is a fact that the cost of furnishing service to a telephone upon a large exchange is proportionally much greater than the cost of furnishing service to a telephone upon a small exchange, and that an increase upon the charges per telephone is necessary. But when the increase in the amount of service rendered to a subscriber upon a large exchange is taken into consideration there is found to be really a very great reduction in the price of service to the subscriber as against the cost of service upon a small exchange.

For illustration: The average number of calls for each of the telephones upon an exchange of 150 telephones per day will not exceed five calls per telephone, or 150 calls per month, per telephone. If the rate be $1.50 per month, the telephone service then costs the average subscriber one cent per call. The average number of calls per telephone upon an exchange of 500 or more is approximately 10 calls per telephone per day, or 300 calls per month. Suppose the rate on such an exchange to be $2 per month, it will readily be seen that the telephone service on such an exchange, though increased per telephone, will only cost the subscriber ⅔ cent per call. The same rule will apply whatever the rate may be. It will, therefore, be seen that instead of the telephone service becoming more expensive to the subscriber as the size of the exchange increases, it actually becomes less expensive as the size of the exchange increases.

It is the immutable law of nature that something cannot be given for nothing. This is as true with telephone service as any other commodity or necessity received by the human family. A telephone company cannot render to a subscriber 10 telephone calls per day, or 300 telephone calls per month as cheaply as it can render to him five calls per day or 150 calls per month. This is a fact that has been demonstrated by every telephone exchange that has ever been installed which has remained in business and increased its capacity, and what experience establishes universally must be the guide in business affairs as well as all other affairs of life. But we do not have to leave the matter simply with what experience has demonstrated. It is a very easy matter for any reasonable man to ascertain the reasons for this in the matter of telephone service, as well as all other business affairs.

In an exchange with a small number of telephones, the construction of the exchange is simple and the investment per telephone is not great; the switchboard is not expensive and is easily maintained, not requiring the services of an expert; the poles are not required to be large and the cables, if any, are not only small, but of short length; no underground construction is necessary; the cost of operation, maintenance and replacement are all relatively small; the telephone lines are short; and the operator at the switchboard can handle many more telephones. As an exchange increases in size these conditions gradually change and in the due course of time it becomes necessary to have underground conduits, longer cables, multiple switchboards, power plants, and supervisory apparatus of many kinds, and the employment of expert men, at a greater rate of pay, and additional apparatus that must be added from time to time and the necessary space for the accommodation of employes.

There are also conditions in this state which make it more expensive to maintain telephone service than in almost any other part of the country, such as greater freight rates, greater cost of living for employes; greater difficulty in securing efficient employes, and higher wages and salaries which have to be paid to them, and climatic conditions which seriously affect telephone equipment caused by the extreme moisture. There are also conditions at this time throughout the country which make it more expensive to render telephone service than at most any other period of the history of the country since telephones have been in general use. In the past few years everything that goes into an exchange has increased in price. Poles cost several times what they did a few years ago and wire and mechanical labor cost much more. This is not only true in telephone business but is true in every class of business, and of every commodity that is purchased or sold.

There are many items in detail entering into the matter which your committee have not enumerated believing that the points stated above sufficiently set forth the facts which have governed your committee in recommending this graduated scale of rates.

The report is signed by W. G. Brorein, Ed. Scott, E. E. Voyle, Dr. W. L. Moor, and Geo. C. Fernald.

For Trade Press Efficiency.

President H. M. Swetland, of the Federation of Trade Press Associations in the United States, announces that the program has been completed for the eighth annual convention at the Hotel Astor, New York, September 18 to 20. Acceptances are in hand from over 60 speakers of national reputation in the manufacturing, selling, advertising, and publishing fields. There will be 50 ten-minute addresses at the editorial, circulation, advertising and publishing symposiums on vital questions affecting all those who have dealings with the business press of America.

Other features of the convention will be an exhibit of successful class, technical, and trade journal advertising campaigns, a big business meeting at which will be told the inside stories of the big trade paper publishing successes and an inspirational mass meeting with addresses by representative business and professional men on subjects of live interest to editors, publishers, and advertisers.

Preparations for Missouri Convention.

A communication from Ed. A. Hook, of Appleton, Mo., secretary of the Missouri State Telephone Association, the first convention of which will be held at Sedalia, Mo., Aug. 20 and 21, announces that information received indicates the largest convention of telephone men ever held in a single state. The Public Utilities Commission has promised that one or more of its members will attend the meeting. Several supply houses have reserved space at the Hotel Terry where the latest in telephones and equipment will be on display. The headquarters and registration desk will be at Hotel Terry. The meetings will be held in the court house. Missouri telephone companies are requested to send a card to the secretary giving the correct name of the company and its officers and to state whether a representative will be present.

Picnic of Harlan Telephone Company.

The Harlan Telephone Co., Harlan, Ind., is planning a picnic to be held in the A. M. Reichelderfer Grove at Harlan, Ind., on August 20. The speakers will be R. T. Cloud, Chicago; O. E. Barnard, Indianapolis; E. L. Taylor, Fort Wayne; Martin Umbach, Fort Wayne; and E. E. Shaffer. About 60 exchanges will be represented at the picnic and a good time is expected.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities, and Actions of City Councils Bearing Upon Franchises, Rates and Service

Delay in Government Anti-Trust Suit Denied.

Federal Judge R. S. Bean, sitting at Portland, has denied the plea of defendant telephone companies for delay until October 31 in the filing of their answer in the suit brought by the government to dissolve the alleged telephone trust. He has ordered that the answer be filed not later than September 15.

This is the civil suit which the government has brought against the Bell company and its subsidiaries operating in Oregon, Washington, Montana, and Idaho, a complete report of which was published in the August 2 issue of TELEPHONY.

Interstate Commerce Commission to Consider Toll Rates.

According to a Washington dispatch, the telegraph and telephone companies will be the next public utility corporation to feel the hand of the Interstate Commerce Commission. It is probable they will be ordered materially to reduce their rates. The members of the commission have been giving some time to the discussion of rates charged by these companies, especially by the American Telegraph & Telephone Co.

It has been brought to the attention of the commission that this company has been able to increase its earnings substantially by abolishing branch telegraph offices at various points and compelling its patrons to telephone their messages to a central telegraph office.

This, of course, causes no hardship to the telephone subscribers, but the non-subscriber is compelled to pay for the use of the telephone in addition to the cost of the telegraph, so that the profits of the company are increased, first, by the reduced cost of maintaining branch offices, and, second, by the increased telephone tolls.

Constitutionality of Wisconsin Connection Law Attacked.

The Wisconsin Telephone Co. has started suit against Attorney Frank Winter, the La Crosse Telephone Co., and the Railroad Commission of Wisconsin to secure the vacation of the recent order of the commission compelling physical connection between Bell toll lines and Independent telephone company at La Crosse.

The company maintains that the Wisconsin physical law is in violation of the state and federal constitutions and interferes with interstate commerce and therefore is unlawful. The order of the railroad commission, says the complaint, is unlawful inasmuch as it deprives the Bell people of property without due process of law.

The attack on the Wisconsin statute is in reality an appeal from the order of the railroad commission compelling physical connection between the toll lines of the Bell company and various other lines in Wisconsin.

John H. Roemer, a member of the railroad commission, declared that, in his opinion, the constitutionality of the law is unquestionable.

"If Wisconsin's physical connection law doesn't stand, you can't draw one that will," said Mr. Roemer. "I drew the decision in the La Crosse case, anticipating that the matter would be taken into the courts, and practically all of the questions to be decided will be found in that decision. We want a court test."

In attempting to tear the law from the statute books the Bell company, it is said, is following out an organized plan, decided upon some time ago, to fight physical connection laws wherever enacted. Suits similar to the La Crosse suit have been started in other states.

In its complaint the Bell company maintains, that the order and the statutes purporting to authorize the same, comprise an act depriving the company of property without due process of law. It is also contended that the physical connection statute is in violation of section 1 of article XIV of the amendment of the constitution of the United States and is in violation of sections 12, 13, and 22 of article I of the constitution of Wisconsin.

The company further maintains that the commission's order does and "will affect interstate commerce and is and will be a regulation of interstate commerce" and therefore is in conflict with constitutional provisions.

The physical connection law passed the Wisconsin legislature at the 1911 session. It was on July 25 of that year that Attorney Frank Winter, a La Crosse telephone subscriber, stepped to his telephone and demanded to talk to a subscriber to the Bell telephone over long distance. His request was refused and he immediately petitioned the commission for an order compelling the companies to furnish such connection. Hearings were held and in May, 1913, the commission ordered such connections.

At the time of the contest before the railroad commission,, the Bell telephone company was represented by scores of its best attorneys while Mr. Winter fought his own case.

The action now brought is to be tried in the circuit court for Dane county, where all state business is transacted. Miller, Mack and Fairchild are the attorneys representing the Bell company in this case.

Wisconsin Commission Elucidates New Laws.

Following the enactment of the Kneen law by the present legislature of Wisconsin, by which all lines are brought under the anti-duplication act, the Wisconsin Railroad Commission has issued a comprehensive statement of its provisions for the guidance of all telephone companies in the state. The provisions of the stock and bond law are also explained.

The commission's letter follows:

COMPETITION OF TELEPHONE UTILITIES.

"Chapter 610 of the laws of 1913, effective July 10, 1913, provides in part as follows:

'No public utility already engaged in furnishing telephone service shall install or extend any telephone exchange for furnishing local service to subscribers in any municipality where there is in operation a public utility engaged in similar service, without first having served notice in writing upon the commission and any other public utility already engaged in furnishing local service to subscribers in such municipality of the installation or extension of such exchange which it proposes to make, or make such installation or extensions if the commission, within 20 days after the service of such notice, shall, upon investigation, find and declare that public convenience and necessity do require the installation or extensions of such exchange, except that any public utility already engaged in furnishing local service to subscribers within any city or village may extend its exchange within such city or village, without the authority of the commission.'

Under this law it will be necessary for you, before extending your lines for local service in or into any township, village or city in which another telephone company is furnishing similar service, to serve upon this commission and upon such telephone company a notice of your intention. We suggest that in this notice you follow substantially the form appended hereto. If within 20 days this commission does not serve upon you its declaration

that your proposed extension is unwarranted by public convenience and necessity, you may proceed with the construction of the lines.

When a notice is served upon you by another telephone company, it is to your interest to inform the commission immediately if you are opposed to the extension of the other company's line. The failure of the commission to make a finding within 20 days against the extension operates, under the law, as an authorziation for its construction. The law limits so strictly the time in which the commission is to investigate the matter, that quick action must be taken by any telephone company which desires to prevent the extension of a competing line.

STOCK AND BOND LAW.

We take this occasion of again calling the attention of such telephone utilities as are corporations, to provisions of the stock and bond law. Although the commission has endeavored to reach all of the telephone corporations in the state with copies of this law, over one hundred cases have arisen since the law became effective where telephone corporations have issued stock in violation of the law and the stock has, therefore, been void. The commission has been lenient as possible in such cases, since the claim of the companies has invariably been ignorance of the law; but henceforth no such excuse will be accepted. If you have not a copy of the stock and bond law, or are in doubt as to any of its provisions, please address this office. The stock and bond law applies only to Wisconsin corporations."

Want Bell to Connect with Private System.

The city council of Appleton, Wis., has appealed to the Wisconsin Railroad Commission in an effort to compel the Wisconsin Telephone Co. to connect with the private system now in the city hall. At the present time the city is paying $30 a year for the one line running to the exchange in the building. There are seven telephones used on the private system.

The telephone company insists on taking out that system, putting in one of its own, and charging $182 a year as soon as the physical merger of the Wisconsin and Fox River telephone companies is completed. Two years ago the Wisconsin company refused to bid in putting in the private system and that telephone was thrown out, the city limiting its talk to the Fox River line.

The council is not taking the stand merely for the benefit of the city, but also for citizens who have private systems in their place of business, such as hotels and stores which have a private exchange.

Wisconsin Commission Refuses Eau Claire Application.

Acting in accordance with a recent opinion by Attorney-General W. C. Owen, the Wisconsin Railroad Commission, in a formal order, has dismissed the application of the Citizens' Telephone Co., of Eau Claire, for authority to issue $60,000 of stock to build a telephone exchange in the city of Eau Claire. The attorney-general held that under the conditions prevailing in regard to duplication of lines there is no warrant for permitting the Citizens' company to establish a local exchange. The field is already covered by the Wisconsin (Bell) company.

Appeals to Ohio Commission for Rate Reduction.

The city of Lancaster, Ohio, on behalf of itself and citizens, has appealed to the Ohio Public Service Commission to order the Central Union Telephone Co. to reduce its rates for business telephones. The rates were raised July 1 from $36 to $42 for single party business lines and from $24 to $36 for two-party business lines. The city is asking for a restoration of the old rates.

Stock Issue of Middletown Telephone Co.

The Public Service Commission of Ohio has granted permission to the Middletown Telephone Co., of Middletown, Ohio, to issue its common capital stock of the total par value of $49,200 and its preferred capital stock of the par value of $4,000. Common stock to the amount of $17,550 and all of the preferred stock is to be sold for the best price obtainable and not less than par value and the proceeds used to discharge an equal amount of accounts payable incurred in the construction, extension and improvement of the company's plant. The common stock to the value of $31,750 is to be distributed pro rata among the stockholders of the company in reimbursement of moneys heretofore expended from its income which might otherwise have been received as dividends.

Rate Increase Granted by Indiana Commission.

The Public Service Commission of Indiana, in a recent decision allowing the Shirley Telephone Co., of Shirley, Ind., to increase its rates on all classes of service, also decided that the company was justified in obtaining an increased rate from those of its subscribers who preferred a class of service such as rendered by the Leich Automaphone. The increase permitted in the rates, above those charged for ordinary magneto service, was 15 cents per month for Automaphone wall set, and 25 cents per month for Automaphone desk set.

This decision is very favorable to, and one that has long been desired by, magneto exchange companies as it now enables them to give subscribers a class of service which could not be otherwise provided except by a complete and expensive change in plant equipment and instruments.

Changes Inefficient and Inadequate Service.

Mayor Charles Alexander, on behalf of the city of Woodward, Okla., has filed a complaint with the Oklahoma Corporation Commission against the Pioneer Telephone & Telegraph Co., charging inefficient and inadequate service in that city.

The complaint, which is made in pursuance of a resolution of the city council of Woodward, charges that the employees of the telephone company in that city are "inexperienced and underpaid;" are not familiar with their work; and can not give proper service.

Oklahoma Commission Hears from Interstate Commission.

The Oklahoma Corporation Commission has received from the Interstate Commerce Commission, an acknowledgment of the receipt of its complaint alleging the existence of a telephone trust in Oklahoma, with a statement that the case will be set down for hearing at an early date. This is the case to which reference was made in TELEPHONY of July 19, where the Oklahoma commission desires the Pioneer Telephone & Telegraph Co., the Southwestern Telegraph & Telephone Co., the Home Enterprise Telephone & Telegraph Co. of Woodward, Okla. and the American Telephone & Telegraph Co. to establish rates and connections with the Arnett Telephone Co. of Arnett, Okla

California Commission to Investigate Toll Rates.

The California Railroad Commission has advised the Vallejo Realty Board, of Vallejo, Calif., that an investigation will be made of the long distance telephone rates between Vallejo and San Francisco. The realty board has interested local business men in the fight to secure a reduction of tolls, and complaints from many sources have been filed. It is pointed out that rates to San Francisco are much higher than those in force in other cities farther away and that the volume of business transacted is much greater.

Complains to California Commission Against Power Co.

The Southwestern Home Telephone Co., Redlands, Calif., has filed a complaint with the California Railroad Commission against the Southern Sierras Power Co., charging that the latter has erected its poles in undue proximity of the poles of the Southwestern company.

Some Facts Concerning Telephone Transmission Problems

Discussion of Various Factors Which Influence the Transmission of Speech Over the Telephone—Difficulties Encountered by Railroads—Second Installment of Paper Presented at Annual Convention of Association of Railway Telegraph Superintendents

By Elam Miller and C. A. Robinson

Substantial Loop Losses.

Another source of loss is in the substation loop or line connecting the substation to the central office switching apparatus. The two general types of substation equipment are the so-called "common battery" and "local battery" types. These designations define the methods employed for feeding current to the transmitter. No attempt will be made to go into detail as to the proper field of usefulness for the two types of instruments, but simply to indicate the nature and magnitude of the losses for the two cases.

The common battery instrument is the one used in the standard circuit, to which reference has previously been made. With this type of instrument, as the name implies, current for operating the transmitter is supplied from the central switchboard to which all the substation instruments are connected by so-called subscribers' loops. In a common battery loop, allowance has to be made both for the attenuation of the loop and for the current supply, these losses in any case, being the losses in excess of those obtained with the standard circuit which is the basis of reference. In the standard circuit the length of loop connecting the transmitting set and the source of current supply is zero. In so far as the attenuation loss of a common battery loop is concerned, for length of loop other than zero, this can be taken as the attenuation over that length of whatever type of circuit the loop is composed.

The resistance in the standard circuit consists, simply, of the battery supply coil, one winding of the induction coil in the transmitting set, and the transmitter button. Any resistance,

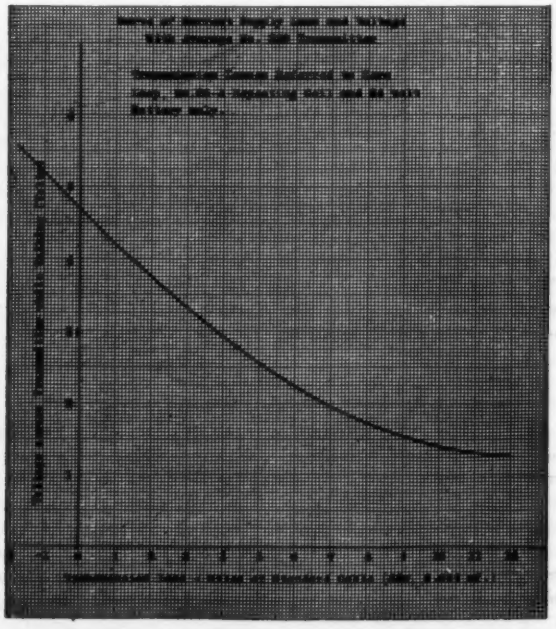


Fig. 5. Losses in Common Battery Substation Loops.

therefore, in the loop, in excess of that included in the standard circuit, will decrease the magnitude of the current which can flow through the transmitter and thus introduce a current supply loss in excess of that of the standard circuit. The magnitude of this current supply loss for the standard Western Electric instrument equipped with a No. 229 transmitter, is shown in Fig. 5, where current through the transmitter during talking is plotted against the transmission loss in terms of miles of standard cable.

With the local battery set, each transmitter has its own sep-

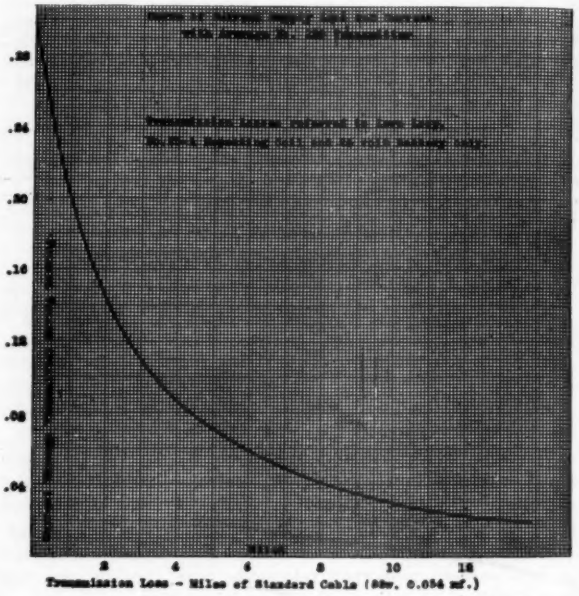


Fig. 6. Transmission Losses in Local Battery Substation Loops.

arate source of battery supply, and usually the battery circuit consists only of the battery, the transmitter, and one winding of an induction coil. The set is therefore not dependent upon receiving any transmitter current from the central office for its proper operation, and the losses in this set, beyond the losses assumed in the standard circuit, consist only of the attenuation loss in the loop connecting it to the central office; that is, assuming that the local batteries are in standard condition. Deterioration of the local batteries, of course, immediately introduces loss. A standard Western Electric local battery set equipped with four dry cells in average condition has the same transmission as the standard 24-volt common battery set as used in the standard transmission circuit. As with the ordinary standard local battery sets, different numbers of dry cells are sometimes employed, Fig 6 has been prepared to show the relation between the voltage across the transmitter when talking and the transmission loss for the standard local battery set of the Western Electric Co., equipped with a No. 229 transmitter.

Fig. 5 and 6 give the transmission losses dependent upon current supply for the ordinary standard type of common and local battery instruments usually employed for commercial telephone service. For certain special forms of service, such as train dispatching by telephone, so-called loud speaking instruments are needed in order that satisfactory transmission may be furnished to a large number of stations bridged across one circuit. The energy impressed on the line by a train dispatcher's set is greater than that which is sent out by a regular standard set, by an amount varying from five to ten miles of standard cable. In these cases the substation circuits are

usually special, and in practically every case special transmitters are employed.

Grades of Transmission.

It must, of course, be obvious that different grades of transmission are required for different classes of service. That is, the volume of received speech for certain classes of service may well be different than for certain other classes. For instance, it has been found that for local service in a commercial telephone exchange, where the use of the telephone is great and the needs of the public exacting, a grade of tranmission of from 18 to 22 miles of standard cable from substation to substation frequently works out very satisfactorily. On the other hand, experience has indicated that for the bulk of long distance service, transmission very much lower in grade than this is entirely satisfactory. Many commercial long distance lines are designed to provide a grade of transmission between substations in the neighborhood of 30 miles of standard cable.

The transmission requirements in railroad work are decidedly different from those in a commercial telephone company. However, a grade of transmission equivalent to 18 miles should be entirely satisfactory to permit of the passing of train orders on dispatching circuits without any mental strain on the part of the listeners, and without any unnecessary repetition on the part of the speaker. For regular talking circuits, as normally operated by railroad companies, it would seem that a 30-mile transmission between telephone stations should prove satisfactory. In any particular case, however, either of train dispatching service or of talking circuit service, those familiar with the requirements of the service must fix the transmission standards.

Interference.

Up to this point we have discussed only sources of energy loss that enter to reduce the volume of received speech. However, in order that telephone service may be commercial, there is another important matter which must be given consideration. That is the question of extraneous current which may manifest itself as either cross talk or noise. Cross talk is the overhearing that may result when an unsymmetrical arrangement of telephone circuits occurs in the same immediate neighborhood. Noise may be the result of telegraph or power circuit induction, or the combined cross talk effect of many telephone circuits.

Any extraneous current flowing in a telephone circuit which finds its way through the receiver produces an effect that tends to render more difficult the receiving of voice currents over that circuit. It is possible to determine experimentally the effect of this interference in terms of the amount of standard cable which will interfere with receiving to the same extent as the extraneous current. The effect of extraneous current on receiving varies between quite wide ranges, depending on the frequency of the extraneous currents, the effect for high frequency being much more pronounced than that for low frequency, between the ranges of from 60 cycles to possibly 800 cycles.

As an example of the effect of superimposed current on receiving, suppose we start with a circuit having an equivalent of say 25 miles of standard cable and pass through the receiver at the listening station 10 microamperes of current having a frequency of 300 cycles per second This very small amount of extraneous current renders it as difficult to receive over a circuit having an equivalent of 25 miles of standard cable as over a circuit composed of approximately 29 miles of standard cable without the extraneous current. In other words, the interference caused by this current is the equivalent of adding to the circuit approximately four miles of standard cable.

It is important that it be recognized that it is just as essential for telephone circuits be free from extraneous current above certain limits as that their make up be such that the attenuation does not exceed certain limits. With this in view and with particular reference to the matter of cross talk, a very comprehensive and effective transposition system has been devised for telephone circuits on the same pole lead. This transposition system, usually spoken of as a system of cross talk transpositions, is not designed to be effective against extraneous sources of inductive trouble such as paralleling power leads. The question of power induction, however, is not a matter that will be discussed in this paper as it is being very ably handled by Mr. Howe of the Western Union company. Such references, therefore, as are made to the matter of power induction, will be made but incidentally in connection with insulation and maintenance matters.

As to cross talk, the telephone transposition systems which are in general use give entirely satisfactory results when regular commercial forms of telephone substation equipment are employed on the different circuits. It is very probable, however, that the present standard transposition schemes will not be satisfactory in all cases where loud speaking instruments, such as are normally employed for train dispatching, are used in impressing a much greater amount of energy on the line than is the case with regular commercial instruments. While, therefore, it may be that no serious difficulties have been experienced from cross talk on open wire lines up to the present time, it is very likely that this is because the dispatching and message circuits, on which the loud-speaking instruments are used, have been more or less isolated from other telephone circuits and from each other.

The general tendency at this time seems to be to use train dispatching circuits and message circuits as side circuits of phantoms and to employ the phantoms as regular talking circuits. This may mean that in such cases new transposition schemes will have to be devised to decrease the length of exposures between the various circuits, especially the exposures between the phantoms and their own side circuits, and in this way to prevent the cross talk from being excessive when loud speaking instruments are employed.

Regardless of the nature of the substation instruments which are used, cross talk difficulties are often experienced, due to the fact that the transposition systems are not properly applied. This is the case, especially in connection with dispatching and message circuits, in that numerous bridged stations on such circuits are usually located indiscriminately in so far as the transposition schemes are concerned. In the most commonly used transposition systems, a unit length of eight miles is taken and the design of the system is such that in this length each circuit on a 40-wire line is relatively transposed with respect to every other circuit, the transposition being so devised that the maximum transposition or minimum exposure effect exists between adjacent circuits.

For long stretches of line, an 8-mile transposition unit is satisfactory and is normally employed, but to meet special cases, transposition schemes have been worked out for units of less than eight miles. The schemes designed are such that no matter whether any particular length of line is as little as a half mile or as much as eight miles, it may be properly transposed in one unit with the proper transposition balance between all the circuits on a 40-wire lead. Generally speaking, in order that the cross talk between any two circuits may be well within commercial limits, no irregularities of any kind should be introduced in these circuits at an intermediate point in any transposition unit. Any bridged stations which it is necessary to place on the circuits should be located at the junction points of adjacent unit transposition sections. When located in this manner, these irregularities do not unbalance the cross talk system.

What has just been said has particular reference to the bridging of stations on train dispatching and message circuits, especially when it is desired to use the message circuit and the train dispatching circuit as the side circuits of a phantom, which, in turn, is to be used as a regular talking circuit. Each bridged station on a message or dispatching circuit should be

placed at the junction point of two of the unit transposition sections. For example, if the first bridged station occurs six miles out from the beginning of the line and the next bridged station comes three miles beyond that point, with the succeeding one five miles beyond that, and so on, the first six miles of line should be made one complete transposition unit, and the next three miles another complete transposition unit, and the next five miles another complete transposition unit. With the transpositions carefully laid out in accordance with the above outlined procedure, it is believed that no serious cross talk difficulties should be experienced, even in cases where messages and dispatching circuits are used, as the side circuits of phantoms, and where loud speaking instruments are used on the message and dispatching circuits.

With further reference to the question of cross talk between a phantom and its two side circuits, it is to be noted that not only is it essential that a transposition scheme giving a proper balance of exposures be used and that bridged stations be located at neutral points in the transposition scheme, but it is very essential, also, that the two wires making up each side circuit be balanced electrically both in regard to series resistance and in regard to insulation unbalances or capacity unbalances between the two wires of the pair and ground or other outside systems. When it is realized that a series resistance unbalance, between the two wires making up a side circuit of a phantom amounting to from 10 to 20 ohms, will cause cross talk between the phantom and that side circuit, which would be entirely uncommercial, the importance of what has just been stated is apparent.

Trouble of this kind can very readily occur due to careless work on the part of the linemen in repairing breaks, by making hand joints in the wire, or even when sleeves are used by not properly cleaning the wires before making the sleeve joint. It is not unusual, in running down noise and cross talk troubles, to finally locate the source of trouble in one or more sleeve joints having a resistance as great as 25 ohms each. In regard to capacity unbalances, if the wires are properly transposed in accordance with a definite transposition system, no trouble from this source should be experienced. In regard to insulation unbalances, however, this is a condition which may creep in especially at bridling and cabling points, unless the question of line maintenance is properly followed up and the circuits maintained up to a high standard at all times.

Proper maintenance of the outside circuits is, in fact, one of the first essentials of satisfactory telephone service over long distance circuits. This is so not only from the standpoint of cross talk between a phantom and its side circuits or between different physical circuits as outlined above, but also from the standpoint of noise introduced from adjacent power or telegraph circuits. No matter how well transposed against power and telegraph circuits, telephone circuits may be, if the circuits are unbalanced due to poor insulation and poor maintenance conditions, any transpositions which may have been put in specially for the purpose of reducing the effect of the disturbing sources will be largely ineffective, and the particular noise introduced into the telephone circuits may be as much or more than if no transposition had been placed.

Maintenance.

Several references have already been made to the maintenance of the telephone lines. Proper maintenance of the telephone plant, both of the substation and switchboard apparatus and of the outside lines, is essential to satisfactory transmission and the general reliability of the service. Proper maintenance consists in maintaining the plant up to its initial standard of efficiency. As far as the substation and switchboard are concerned, this resolves itself largely into a question of knowing at all times that the various pieces of apparatus are functioning properly and, in case any of the apparatus becomes defective and has to be replaced, that the replacing apparatus be properly wired to insure that new and improper transmission losses may not be introduced from this source. An indication of the kind and magnitude of losses that may occur at the central office has previously been given.

Very serious losses may be introduced at substations by the improper wiring of sets. For instance, in a common battery substation set, a transmission loss as great as 3.5 miles of standard cable may be introduced by the transposing of the condenser and bell. The transposing of these two pieces of apparatus would not introduce signaling difficulties, thus rendering difficult the detection of the error in connections. Other transmission losses of a serious nature at the substation, which may not interfere with the functioning of the set from the signaling standpoint, may be introduced by transposing various other connections.

As far as the maintenance of the outside plant is concerned, there are, of course, a number of things to be looked out for, such as loose ties; broken insulators; excessive slack in the line wires which permits the wires to swing into each other or into guy wires; improper construction at bridling and cabling points, which causes these points to be weak spots in the line from an insulation standpoint; hand joints in the line wires; and the leaving of emergency cable in the circuit after the real necessity for its use has passed. All of these, as well as other things, help to impair the efficiency of the service. Each thing, while small in itself, adds just a little to produce a total effect such that probably no one connection can be completed in an entirely satisfactory manner. In one case, for instance, due to excessive slack in the lines, the wires may swing into a guy wire and the circuit will become noisy and then quiet; or in another case where the line is exposed to power induction, generally faulty maintenance and poor insulation may result in the circuit being permanently noisy. Again, for instance, in the case of high resistance joints in the line wires, excessive cross talk may occur between a phantom and its side circuit when both are simultaneously used. This has previously been pointed out under "Interference."

(To be concluded.)

Telephones in Church.

At a recent church service at Augusta, Ga., the pastor announced the installation of a small instrument similar to the telephone to assist those hard of hearing. The transmitter in this installation was located on the pulpit and receivers placed in the pews in different parts of the church with sound regulators to enable the one using the instrument to regulate the volume of sound to suit himself.

It is said that the transmitter is so adjusted that it catches even the faintest whisper anywhere within 20 feet and amplifies it so that any one, unless he is stone deaf, can hear. In the installation at Augusta two of the three receivers that came with the instrument were placed in the visitor's pews and any one wishing to use one would request the usher to show him to the proper place.

Heroism of Operator at Whiting, Ind.

In the midst of a terrific electrical storm which inflicted damage in Whiting, Ind., lightning struck the Chicago Telephone Co.'s exchange three times and set the Putnam block on fire. Miss Alma Mettser, a telephone operator, continued at her post at the switchboard from 11 to dawn. She answered all calls and plugged away after the flames came through the floor. Smoke filled the room and the firemen came, but she still stuck to her job and refused to leave the burning building.

Sparks from the Troubleman's Department

The Telephone Directory.

What is there seeming duller than this book,
  This stolid volume of prosaic print?
And yet it is a glass through which we look
  On wonderland and marvels without stint.
It is a key which will unlock the gate
  Of distance and of time and circumstance,
A wand that makes the wires articulate
  With hum of trade and whisper of romance!

Somehow there is enchantment in each page—
  The whirr of wheels, the murmurs of the mart,
The myriad mighty voices of the age,
  The throbbing of the great world's restless heart.
Such are the sounds this volume seems to store
  For him who feels the magic of its thrall,
Who views the vistas it unrolls before
  His eyes that scarce can comprehend them all!

Here is the guide to all the vast extent
  The wires have bound together; this will show
The way to help when need is imminent,
  When terror threatens or when life burns low;
This brings the lover to his heart's desire
  That he may speak to her o'er hill and lea,
This is the secret of the singing wire—
  To all the "world without" this is the key!

—The Telephone Review.

Hello Central.

"Hello, there, central. Is this central? It is? I thought it was, but I couldn't be quite sure. The other day I supposed I was talking to central and here it was only my grocer. I do think there are some queer mix-ups in this telephone service. What I want now is to find out the number of a Mrs John Smith—S-m-i-t-h, Smith. I find that there are more than 100 persons of that name in the book, and I don't know which one is the husband of the lady I want. She is a large lady with a florid face, and prematurely white hair, and I think her husband is a traveling man, and a brother-in-law of her's named Jones lives somewhere on M street, a stoutish, elderly gentleman with side whiskers.

"Now, kindly let me have Mrs. Smith's number at once. I have it on a slip of paper that I can't find. Seems to me it was two-four-sixteen ring three, or ninety-two-sixty-four ring two. You know how confusing telephone numbers are. Let me have Mrs. Smith's number right away please."—Puck's Quarterly.

What is ragtime? Why, 4:30 of course, when the operator powders her nose.—Federal Bulletin.

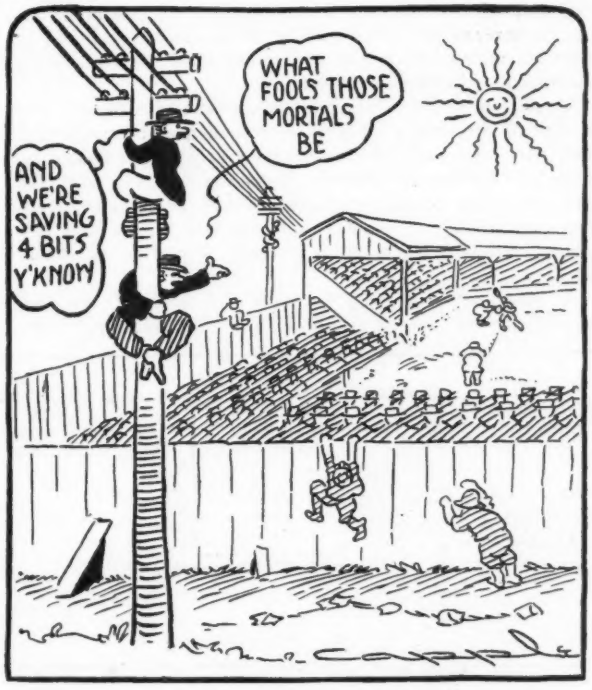
William, aged 5, had been reprimanded by his father for interrupting while his father was telling his mother about the new telephone for their house. He sulked awhile, then went over to his mother, and, patting her on the cheeks, said, "Mother dear I love you."

"Don't you love me too?" asked his father.

Without glancing at him, William said disdainfully, "The wire's busy."

TELEPHONY'S BASEBALL TERMS.

Taking Down a Connection.



A Pair of Sharp Climbers.

A Good Pole Horse.

Prospective purchaser—I want a horse to use in my work.

Dealer—Well, what kind of work do you do?

Prospective purchaser—Wire repairing.

Dealer—Here she is. Just the horse you want, young man. All you have to do is to show Maude a picture of an automobile and she'll climb a telegraph pole.—Our Animals.

Practical Subjects—Letters and Discussions

Locating Breaks With Alternating Current Mil-Ammeter.

A large part of the cost of clearing trouble on long telegraph and telephone lines is due to the fact that wire chiefs and test board men are not provided with means for accurately locating breaks or "opens." This is especially true of lines in the West where test offices are frequently from 20 to 50 miles apart, and transportation facililties for linemen are both few and expensive.

The methods usually employed for locating opens in cables cannot be successfully applied to open wire lines, and, as a general rule, no attempt is made to determine the position of a break beyond locating it between two test offices.

The development of the alternating current mil-ammeter has now made possible a method by which this class of opens can be located with great accuracy. This method is based on the fact that when an open wire is connected to a grounded alternating current generator, the amount of current that will flow into the wire, due to its capacity, bears a definite relation to the length of the line, although it is not directly proportional to it.

This principle is applied to the location of opens by the use of the arrangement shown in Fig. 1. The function of the adjustable condenser is to eliminate the effect of induced currents set up by parallel telegraph circuits, and to afford a means of varying the strength of the alternating current, as will be explained later.

To determine the relation of the amount of current to the length of the line, a good wire is opened at the most distant test office and the condenser or voltage adjusted to give the maximum readable deflection. Then, with the same voltage, frequency and condenser adjustment, readings are taken to opens at all available offices and test poles. From these readings a curve is plotted as shown in Fig. 2.

A separate curve must be made for each pole line because both the amount and location of the capacity are different for different lines. If a line contains any considerable length of cable, a reading should be taken to opens at each end of it, as the presence of cable or twisted pair greatly changes the shape of the curve. By keeping a record of all measurements and the actual location of the breaks found by linemen, many new points can be located between offices and the curve changed to conform to them, thus making it more nearly correct.

Repeated experiment has shown that in a dry country these values remain practically constant, but inasmuch as the capacity and insulation resistance of all lines are subject to variations, it is advisable before making a measurement to take a reading to an open, either on the faulty wire or on a good wire of the same size, at the test office nearest the break. If any discrepancy is noted, the voltage or condenser is varied until the reading shown by the curve for that office is obtained. A reading is then taken on the faulty wire to the break and the location of the open read directly from the chart. If the end of the broken wire towards the testing office is grounded, the distant portion of the wire can be looped back from the first office beyond the break, and the necessary calculation made to locate the open. When both ends of the broken wire show heavy leakage, approximate locations may still be made provided the wires are not dead grounded. A d. c. milammeter and a source of direct current with the negative pole to the line should be used to determine the amount of escape at the break. The ordinary voltmeter is not suitable for this purpose.

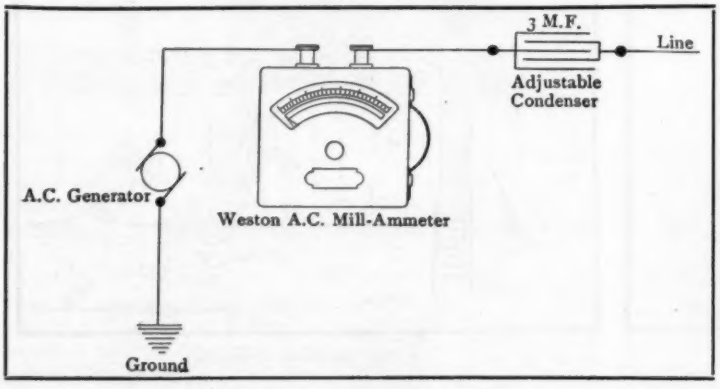


Fig. 1.—Circuit for Locating Opens.

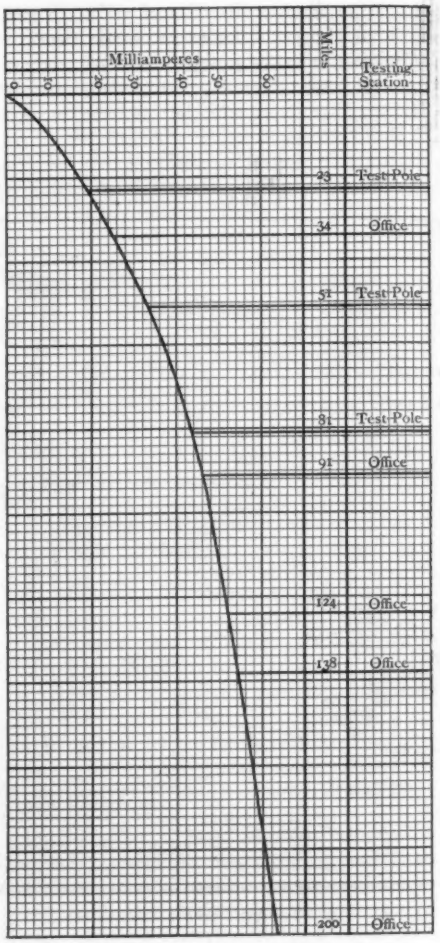


Fig. 2.—Curve Plotted From Meter Readings to Known Opens.

Within a radius of 150 miles, breaks can be located by this method with an average maximum error of not over two miles. Beyond this distance the accuracy decreases, but it is of great value up to 200 miles. For greater distances the curve becomes too flat to be of use.

This method has been in use for nearly a year on a number of pole lines aggregate about 700 miles in length, and has given most satisfactory results. As one

instance of the great saving in maintenance effected by its use, it may be stated that on one of these lines the first test office is located 138 miles from the testing station. It was formerly the practice when a break occurred in this section to start a lineman from each end. It generally took two days to clear the trouble and much expense was incurred by the linemen for transportation and meals. Since the adoption of this method, breaks are closed with little loss of time and with a minimum of expense.

The mil-ammeter used in connection with these tests is the Weston a. c. portable type having a scale of 0 to 75. It is dead beat, and when used with the condenser is not affected by induction from parallel circuits. On lines that do not carry telegraph, the condenser could probably be dispensed with if some means is provided for carrying the voltage of the generator without changing the frequency.

Besides being used for breaks on outside lines, many other uses of the a. c. mil-ammeter will suggest themselves to the experienced wire chief. For instance, knowing the normal deflection to the end of the cable, it is an easy matter quickly to determine if a circuit is open in the cable; in the protectors at the distant end of the cable, or beyond them. It also affords a quick means of locating open fuses in a distant test office.

This instrument when used intelligently will quickly pay for itself in saving of time and maintenance expense, and is a most useful addition to a wire chief's testing equipment.

R. T. Davenport, Wire Chief,
Williams, Ariz. Postal Telegraph-Cable Co.

Salary Increases for Efficiency.

As an incentive to good service and in appreciation of the efficiency and service of its employes the Atlanta Telephone & Telegraph Co., Atlanta, Ga., made effective on June 1 a voluntary increase in salaries of certain operators. The increase applies to operators showing the best efficiency and to those having longest served the company. Added to previous increases that have been made during the past four years, this will aggregate an increase of between 15 and 20 per cent. in the entire salary list of the employes of the company.

While this increase is a part of the company's general policy of rewarding merit and faithful service, it has nothing to do with the special rewards that are made from month to month in connection with the weekly efficiency tests of the operators. Under the system which prevails in the Atlanta Telephone & Telegraph Co., and which the operators themselves highly approve of and appreciate, it is possible for an efficient operator to make anywhere from 2½ to 7½ per cent. more than her regular salary each week. This means that an operator who stood practically perfect in the efficiency test for the four weeks will get an increase of about 30 per cent. per month, over her monthly salary. However, the rewards are made on a sliding scale, so that an operator can not lose everything by one little break. In other words, the operators who are not perfect do not fail to benefit by these special rewards, but the more efficient they become, the more they get.

The test for efficiency combines uniform courtesy and politeness, with the highest reasonable degree of speed. Once or more every week test calls are sent in to each operator. She never knows when they are coming. They may come on part of her key board. If she answers politely "Number please?" and handles the call correctly within the time limit, she is given a good mark. If she "muffs" the call; that is, gives the wrong number or makes any mistake for which her own carelessness is responsible, a bad mark is given her. If she fails to say please, or answer in a courteous manner, she fails to get a good mark.

This system is one in which the girls take a keen interest and pleasure.. It means more money for them and better service for the public.

The Rural Telephone Proposition.

About ten years ago 150 farmers organized and proceeded to build an exchange in this vicinity. Stock was sold at $80 a share and each stockholder was to receive free telephone service.

This plan was followed until 300 subscriber stockholders were getting free service, when it was deemed wise to issue no more stock, but to charge $1 per month to new subscribers, the original 300 to still get their rental free.

The system has increased to 750 telphones with three exchanges. Of the subscribers, 450 pay $1 per month and 300 pay nothing. I want to reconstruct and also build copper toll lines and house the equipment in the company's own buildings.

What would be the best method of presenting this matter to the 300 stockholders? They cannot see that they ought to pay for service and they cannot be induced to let go of enough money to make improvements, other than ordinary extensions and light repairs.

I like these farmers and I would like to improve their service in every possible way and at the same time help outside exchanges get better service through us.

By the way, I would like to see a law passed which would compel every operating company in existence to put No. 12 copper in all of their toll and heavy party lines. Is this a rash statement? In this community and others adjoining, there is not one company, of which I know, but what could easily do this—stringing in new copper for the toll lines and using the vacated iron toll circuits for relieving the heavily loaded party lines.

How will the farmer ever get the service he demands unless better circuits are constructed in and between local exchanges? Connecting a heavily loaded party line of the magneto type to a well constructed long distance toll line reminds me at times of the Scripture saying, "putting new wine into old bottles," or the standard version, putting "a new patch on old pants."

Would be glad to hear from others on this subject.

Etna Green, Ind. F. L. Whitaker.

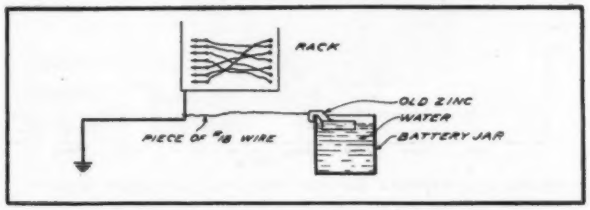
Observations of a Troubleman.

The troubleman was adjusting the ringer of a farm line telephone. The lady of the house was speaking to him: "———— and we never have the telephone open."

Her small son at this point ran in from out of doors, stuck his head almost into the telephone as if fascinated by some object therein.

"There, by Gee!" he exclaimed. "I wondered what that thing was for, when ma had the telephone open. Now I found out."

A recent discussion of the "ground" at a certain office



The Ground a Troubleman Found.

brought forth the contribution shown by the diagram, a few days later. All this was on the floor in the office.

Maybe TELEPHONY's readers have heard of the Detroit installer who put a ground clamp on an iron bedstead.

Michigan. H. A. D.

From Factory and Salesroom

Convention: Missouri, Sedalia, August 20, 21

Lima, Ohio, Adopts Automanual.

On August 8, the Lima Telephone & Telegraph Co., Lima, Ohio, placed a contract with the Telephone Improvement Co. and the North Electric Co. for a 3,600 line Series "B" standard Automanual system. The installation is to be completed and in readiness to cut over by February, 1914. This action of the Lima board of directors is significant, due to the fact that the new plant to be equipped with automanual consists of the merged plants of the Lima Telephone & Telegraph Co. and the Central Union Telephone Co., and the board of directors is composed of six local and three Central Union directors.

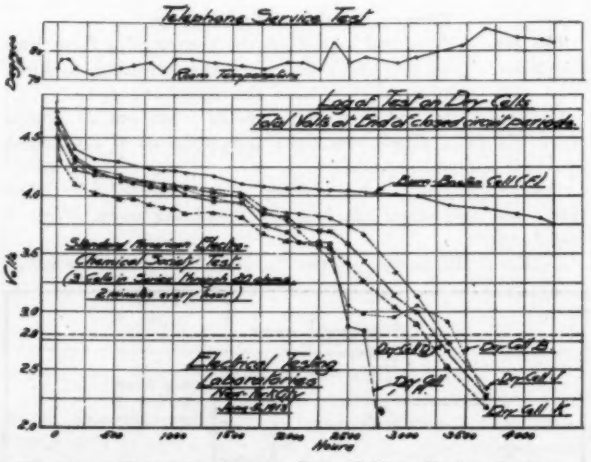
Shortly after the Ohio Public Service Commission gave its approval to this merger, the local company commenced a thorough investigation of the various switching systems. A committee, appointed for the purpose, toured the United States making a careful inspection of every known type of switchboard. Therefore, the Telephone Improvement Co. and the North Electric Co. are to be congratulated as this endorsement of the automanual is unquestionably a great compliment.

Work will be commenced at once to enlarge the Lima Telephone & Telegraph Company's building to accomodate the merged plants.

The Lima Telephone & Telegraph Company's officers who were active in these negotiations are D. J. Cable, president; Geo. H. Metheany, secretary and general manager; and Gustaf Hirsch, consulting engineer. C. H. North, president North Electric Co., and Garrison Babcock, general manager of the Telephone Improvement Co., represented the successful manufacturer.

Standard Service Test on Burn Boston Battery.

The committee on dry cells of the American Electrochemical Society, adhering to a more or less established practice, in 1912 recommended, as the standard service telephone test, the discharge of three cells in series



Results of Telephone Service Test of Burn-Boston Battery.

through 20 ohms resistance, two minutes each hour until the series falls to 2.8 volts at the end of the closed circuit period. It is probably impossible to compress an approximation of service conditions into a shorter period. This test has therefore been generally adopted as standard.

The Electrical Testing Laboratories of New York is now applying this test to five makes of dry cells in common use for telephone purposes and also to the Burn-Boston cell. The test as to the Burn-Boston is as yet unfinished but it has progressed far enough to afford interesting data.

The performances noted of the several sets of dry cells were nearly uniform, the longest life to the cut-off point being about 4½ months. At the end of that period, the Burn-Boston stood at 3.8 volts.

It is probably impossible to forecast more than approximately the remaining life of the Burn-Boston series. If the "skin voltage" is eliminated, however, and the average actual service voltage for the several sets is taken as 4.38, the Burn-Boston series has fallen about one third of the distance to cut-off in the time taken by the most efficient of the dry cells to fall the entire distance.

Standing tests at hand indicate that deterioration on open circuit is almost wholly arrested in the Burn Boston. Actual service over extended periods should bring this characteristic into play as a considerable factor in prolonging efficient life.

The makers contend that a material saving is to be effected in the battery account through reductions in maintenance and inspection, notwithstanding the higher price of their cell. Figures showing these costs segregated from others in the same category are not immediately available. It is probable that, although the price of the dry cell is now nearly uniform, inspection and maintenance vary considerably with the density of the subscribing population and are affected also by the tendency of the inspector to replace cells which might reach the cut-off point before the next regular inspection.

Of course, if the rate of fall of the Burn-Boston is as much slower as the test mentioned would indicate, premature cut-off should appear at proportionately smaller figures in the battery expense account. Also, if the rate of fall in service can be predetermined even approximately so that the automatic operation of the renewal "ticker" becomes entirely dependable, an improvement in efficiency immediately appears—somewhat difficult to value perhaps, but none the less interesting to the keen cost-cutter.

New Advertising Manager for International Harvester.

It has been announced by the management of the International Harvester Co. of America that F. W. Heiskell, for two years assistant advertising manager, will succeed M. R. D. Owings as advertising manager, and that A. C. Seyfarth, formerly head of the production department, will take the position left vacant by Mr. Heiskell's promotion.

Both of these promotions are along the regular civil service system of advancement laid down by the company in building up its organization. Mr. Heiskell began his work in the harvesting machine business 20 years ago while still a high school boy in Indianapolis, working in the repair room under James B. Heywood, who was guiding the McCormick destinies in Indianapolis at that time. After his graduation in 1895 he was given a permanent position.

He worked his way up from the repair department, until in 1905 he was sent to Fort Wayne to be assistant to J. W. Wisehart, who was the International general agent at that place. The following year he was sent to Akron, Ohio, to establish a transfer agency, using the Buckeye plant recently purchased by the International Harvester

Co. from the Aultman-Miller Co. In 1907 he went to East St. Louis to establish a transfer and distributing house for the Southwest territory, for the purpose of relieving the congestion at Kansas City. He was later made assistant general agent at Indianapolis under "Jess" Everson, which position he was holding when he was transferred to the Chicago headquarters to be assistant advertising manager.

Mr. Seyfarth has been identified with the advertising department of the International since its formation in 1903. Beginning as a catalog writer, he has gradually gone ahead until the last few years he has had charge of the production department, which issues catalogs, folders, calendars, the I. H. C. Almanac and Encyclopedia, and other literature. He is a University of Michigan man.

Both Mr. Heiskell and Mr. Seyfarth are well known to the trade. They possess the confidence and esteem not only of fellow members of the International organization, but of the farm machine world in general.

From the Ericsson Business Primer.

G. R. stands for Grand Rapids, Mich. It might be thought that it stands for "going rapidly" for Grand Rapids is "some little town" and really is rapidly going ahead industrially, socially and in every other way.

One of the things that keeps Grand Rapids moving is having "Chris" Litscher in its midst. "Chris", as all his friends know, is always "going rapidly" after the telephone and electric business of his state, and he is always getting the business. What "Chris" goes after he gets, and so his business at 28 Market Avenue, S. W., keeps increasing and helps Grand Rapids to grow rapidly, and the city will keep on growing as long as "Chris" stays there.

"Chris" is a great believer in "service." That is one thing that has helped him grow. And he is located within a one-day freight radius of almost every point in Michigan, which is important to Michigan buyers of Ericsson apparatus.

The ability to secure Ericsson all steel telephones, Hand Mikes and test sets in one day, and save freight besides, is one of the things that is evidently appreciated by Michigan telephone operators, and this keeps "Chris" Litscher on the move and Grand Rapids growing.

Sturtevant Company to Have Canadian Plant.

The B. F. Sturtevant Co. of Canada, Limited, has arranged for a plant in Galt, Ont. From this plant the company will handle all business in Canada, and also export to England, Australia, and other foreign countries. The property in question is such that the manufacturing and assembling of the more important lines as manufactured by the B. F. Sturtevant Co. of Boston, can be started almost immediately.

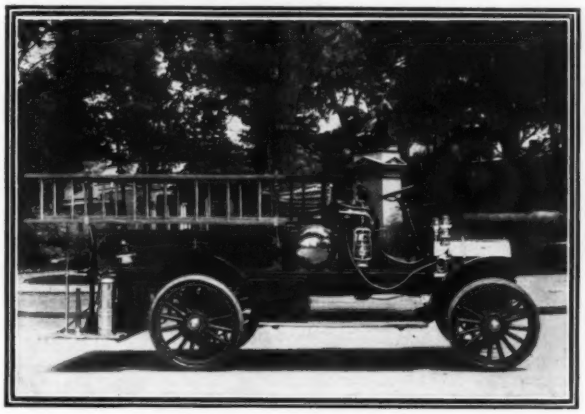
Arrangements have been made to provide for a growth up to ten acres of plant, as arranging for this plant and incorporating in Canada, means a development of the blower business in Canada by this company on the same large scale as has been accomplishd in the United States by the B. F. Sturtevant Co. of Boston.

Salesmen are already located to cover Montreal, Toronto, and Vancouver sections, and offices will soon be established in each principal city of Canada. The maufacturing, engineering and sales will be handled by men trained by the Sturtevant company of Boston, and the general policy of that company of manufacturing high grade material for the best class of trade will be carried out.

Some of the more important apparatus which will be built include fans and blowers, planing mill exhausters, propeller fans, heating and ventilating apparatus, fuel economizers, mechanical draft, steam turbines, vertical engines, generating sets and stokers.

Automobile Hose Wagon and Telephone Fire Alarms.

Telephone companies are more or less interested in a fire fighting organization in the cities and towns in which they operate, owing to the fact that so many alarms are sent in by telephone and also that in many cases the fire alarm circuits are maintained by the telephone companies.



Chase Hose Wagon Built for Ontario Hose Company.

The accompanying illustration shows an automobile hose wagon which has been built for the Ontario Hose Co., of Canandaigua, N. Y., by the Chase Motor Truck Co., of Syracuse.

With a truck of this kind the fire fighting company, upon receipt of an alarm by telephone or through the regular channels, could make a record breaking run to the scene of the fire. It will be noticed that the truck carries all the essentials with which to quench an incipient fire. It arrives on the scene long before the man-drawn or horse-drawn vehicles can get a fair start in the direction of the fire. Used in towns having telephone fire alarm service, the fire losses should be small.

The Littlest Wood Telephones.

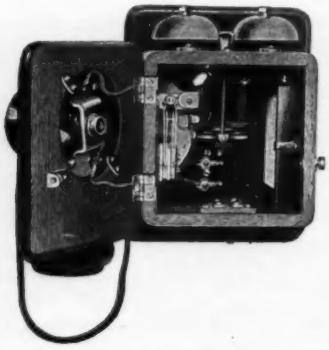
There are some people who will not ride in automobiles because they are fond of horses, and there are some folks who are so fond of a well selected piece of wood, that they will not have any of the new fashioned metal furniture about them. This does not mean, of course, that the

Exterior of No. 867 Type Set.

new things are not good, but it only exemplifies that the manufacturer of any article who attempts to serve all classes of trade must be capable of offering an extensive line of equipment regardless of its nature. It is a fact that there have been many manufacturers of metal furniture, and there have been a great many types of metal tel-

ephones, but, it is claimed, there are more wooden telephones than ever being sold today.

The accompanying illustrations show a popular type of wooden wall telephone for private branch exchange installations in hotels, factories, and offices, which has been designed especially for the trade that still insists upon having the neat oak woodwork. This No. 967 Type telephone is said to fill the requirements where compactness is a necessity, at the same time providing a telephone that is fully equipped with standard parts arranged in a rigid and accessible manner.



Interior View of Set.

It contains, principally, a No. 3-F, 500-ohm, short type, polarized ringer, No. 25, one mf. "Quality" condenser, No. 34 hookswitch, No. 37-A transmitter mounted flush, and a No. 21-A direct current receiver. Although fully equipped and made of the highest grade materials, this little telephone sells for a very reasonable price. The manufacturer, the Stromberg-Carlson Telephone Mfg. Co. Rochester, N. Y., will be pleased to quote prices and furnish literature upon application to any of its offices.

Catalog of "Security" Telephone Specialties.

The F. Bissell Co., Toledo, Ohio, has just issued a catalog containing halftone photographs, description and prices of "Security" telephone specialties. This catalog is a valuable addition to the files of users of telephone construction apparatus and will be sent free to anyone for the asking.

Prose Poem on the Farm Telephone.

The advantage of the telephone connecting with the nearest town is shown, says a writer in Successful Farming, by the frequency of calls from neighbors (who have no telephones and do not think it pays to have one put in) to talk to the elevator man, doctor, or friend.

"Well, I'm much obliged to you for the use of your phone," they say as they leave; "that just saved me a trip to town."

We all know this to be true; that it saves us many a trip to town besides many dollars by keeping us in such close touch with the markets that we can sell our produce when the price is highest.

There are many times when a sudden drop in prices would cause us to lose several dollars if we didn't have the phone, because we simply could not get time to go to town before we took over our hogs or wheat as the case might be.

The advantage is just as great in buying as in selling. Not only as to prices, but there is always the possibility of the merchant being out of stock. About the only way we can get coal at our town is to call up every day till a carload comes, then hurry down the same day and get a load. If we had to make a trip to town every day this would be monotonous and we would likely give it up and lose our chance. The same is true of other things, such as bran and shorts and similar feeds.

If we are expecting a bill of freight it is very annoying not to know when to go after it, for owing to delays in transmission it is very uncertain how long it will be on the road and it is very seldom that our freight agent notifies us when goods arrive. The station agent can also deliver a telegram by telephone, thereby saving probably several hours, and telegrams are generally important enough to need immediate attention.

And what seems to me to be the most important of all is our close connection with a doctor. Think of the hours of suffering, and even lives, that are saved by getting a doctor when needed. If he isn't in we can call to the neighbor's home and have him come direct from there.

In the summer when the horses and people are too busy, we need something from the store which the hucksters do not carry unless ordered. All we have to do is to call the huckster and he will gladly deliver it even if it is a little out of his line, just to accommodate a customer and possibly get further patronage from him. We all remember what a nuisance it was on threshing day when everyone was so busy for someone to have to go to town after meat. Now we 'phone to the butcher and he delivers the meat at our door, still cold from the ice, just in time to put it on to cook.

We can also get connections with larger towns at small costs. Many a time when there is some break in machinery we can call to the factory at noon, have an expert machinist with the necessary repairs come and have it ready to work with by morning, where if we had to get it, or send by mail we would be delayed several days.

Just such an accident as this happened in our threshing ring last summer when every day before a rain counted many dollars. The break was made at noon and all was ready to work again by morning, when a man had to come over a hundred miles with repairs.

Through the busy season of the year, many of us are liable to hardly get our share of society, especially the women, but we never get too busy to talk a few minutes each day with some neighbor or friend.

We may talk all we please about old-time hospitality and pot-luck, nevertheless, most of us will have to confess that we would rather know before hand when we are going to have company, for in the rush of farm work we do not always have things in company shape, and it is more enjoyable to both hostess and guest if some preparation is made beforehand. And what is still more annoying is to prepare for and expect company and then have them fail to put in their appearance. This is unavoidable at times, but in most cases we can be so informed by telephone.

Most farm people are too busy with the real things of life to have much time to write invitations, and calling by telephone seems to suit the informal nature of most country gatherings much better anyway.

Rates to be Considered by Pennsylvania Commission.

The Pennsylvania Public Service Commission will meet August 19 and take steps to promptly fix the telephone rates throughout the state. The three members of the old railroad commission are familiar with the situation, and the idea is for the representatives of the telephone interests to present their objections to the tentative rates, so that the new members, recently appointed, will have the necessary information. Shortly after this hearing the schedule will be adopted.

Good Record of Avon, Ill., Company.

A report of the business of the Avon Mutual Telephone Co., of Avon, Ill., given at the annual meeting recently held, shows more than a 60 per cent. increase during the past two years. Geo. E. Simmons was re-elected manager. The company is making extensive repairs to its local system, including the painting of all its poles.

Legal Cases and Decisions

By A. H. McMillan

Use of Silent Telephones.

"The public utility commission of Wisconsin has ordered an investigation of the use of silent telephones in this city. Have you any information regarding their use which would be of any assistance to the people in such an investigation? If so, kindly advise me where it may be obtained."

We have no information on this subject. So far as we know there have been no decisions by courts on the question. Neither have seen any decisions by public service commissions along this line.

Just a Clearance.

"We have an electric company which has just started in and in many cases has given us just a clearance. The company's lines carry current at a voltage of from 2,000 to 6,000, being dropped to 110 volts for lights. We have been on the ground some 25 years and should like to know what rights we have."

You are entitled to more than "just a clearance." It is the duty of the electric company to construct its line so as not to interfere with your line, which was previously established. If the company interferes with you, we advise you to appeal to the courts for an injunction, to obtain protection.

Taxes on Patent Articles.

"Where a certain article is patented, and a company is organized in any state in the Union, as a holding company of the patented rights, and organized for the specific purpose of promoting patents and leasing on a royalty basis to a second party for the manufacturing and marketing of the product, is the holding company of the patented rights subject to the regular taxation on its capital stock, or do the taxes paid by the manufacturer of the article cover the entire taxation?"

The holding company is subject to regular taxation on its capital stock. The taxes paid by the manufacturer of the article do not cover the entire taxation.

Injury While Installing Telephones.

The Kentucky Court of Appeals reversed a judgment giving a telephone employe $8,500 on account of breaking his leg while installing and taking out telephones. It was alleged that the injury was caused by the company's negligence in providing the employe with a step ladder, which was not reasonably safe, to use in his work. From the proof it appeared that the ladder did not break but came apart because of the loss of bolts.

The reason for the reversal was that the trial court erroneously advised the jury that in order for them to find for the plaintiff they must believe from the evidence, not only that he did not know at the time of receiving his injury that the ladder was not reasonably safe for use, but also that he could not by the use of ordinary care, have ascertained that fact; and that the company knew, or by the use of ordinary care, could have known, that the ladder was not reasonably safe for the company's use.

The court laid down the rule that the duty of furnishing reasonably safe tools, materials and place to work is primarily on the employer, and that the employe is under no duty to discover defects therein; and unless he knows of their existence, or they are so patent and obvious that a person of his understanding must have discovered them, he will not be precluded from recovery. East Tennessee Telephone Co. vs. Jeffreys, 154 Southwestern, 1112.

Long Distance Calls.

When a long distance call is made on a business telephone, the operator should require the name of the person calling. If it is different from that of the subscriber, the latter must be conferred with and his consent had to a charge against him before such charge is valid.

This was the conclusion of the Supreme Court of Tennessee in a suit brought by a telephone company against a railroad company for an account claimed by the telephone company for telephone service performed for the latter. The telephone company had placed an instrument in one of the railway company's offices in the name of the manager of one of the departments. In a room adjoining the manager's office was located the chief clerk. The latter ran a bill for long distance calls on his own private business.

The telephone company included in its bill against the railway company, the items for service actually performed for the clerk. The railway company required the items to be separated and refused to pay for the chief clerk's private calls. Soon after the bill had run up to a considerable amount, the chief clerk left the employ of the railway company, and afterwards suit was brought. It was uncontradicted that, while the chief clerk had authority to use the telephone for local calls, he had no authority to use it for long distance calls.

The telephone company insisted that inasmuch as the chief clerk was in the office, it could not know whether he was acting for himself or his employer, and that it had a right to assume when the long distance calls were made by him, that he was acting under proper authority. On the other hand, the railway company contended that as the telephone was in the name of its department manager, the telephone company could at any time have ascertained the extent of the chief clerk's authority by inquiring of the manager, and that, failing to make this inquiry, it took the risk.

It was also contended that the telephone company had ample notice, by reason of the refusal of the railway company to pay the bill on at least three occasions, as to the items in the course of their accumulation. To this the telephone company replied that the bill was presented to the chief clerk each time and that he O. K'd it, signing the manager's name and that the telephone company had a right to assume that it would be settled for in some reasonable time, although the separation of items was required as previously stated. In its decision the court said further:

"Any assumed rule of law permitting a charge to be entered against the subscriber for services rendered to third persons, on the ground merely that such persons were permitted to use the telephone for the purpose of calling central, would be, as we deem it, gravely unjust. Such permission to use the telephone is only permission to use the means of coming in contact with the telephone company, in order that a contract may be made between the two touching the particular services desired. An opposite rule would imply a liability as a necessary result of permitting a third person to use that telephone merely for the purpose of calling "central" or "long distance"—a conclusion manifestly inadmissible. In what has been said, of course, we are not to be understood as referring in any way to long distance calls made by members of a family on a family telephone."

The court therefore held that the railroad company was not liable for the personal long distance calls of the chief clerk.

Maliciously Removing Telephone.

A suit was brought against a telephone company to recover damages for the wrongful and malicious cutting out of the plaintiff's telephone. The plaintiff's daughter testified that she went to the door when the door bell rang and saw a young man who asked if her father was in, and, when she said he was not, thrust a bill in the door and said in an abrupt manner, "Give this to him when he comes in, and tell him if he don't come down and pay this bill I will cut his 'phone out." She testified that she reported this conversation to her father. The plaintiff's testimony was taken showing that the telephone company was a rich corporation, and had sent the plaintiff a report showing assets of $869,000,000. A verdict was naturally given for the plaintiff after such testimony. On appeal, the court held that the testimony of the daughter was competent and also that evidence of the telephone company's financial condition was admissible. The court also held that the business of the telephone company was one affected with the public use, and that it was bound to give to all its patrons courteous and prompt service in the transmission of messages, and to be sure it was strictly within its rights before it undertook to deprive one of the public of the rights of its service. The court held that the language of David Crockett, "Be sure you are right and then go ahead," applied to such a company. Carmichael vs. Southern Bell Telephone & Telegraph Co., 78 Southeastern 507; previously reported, 72 Southeastern 619.

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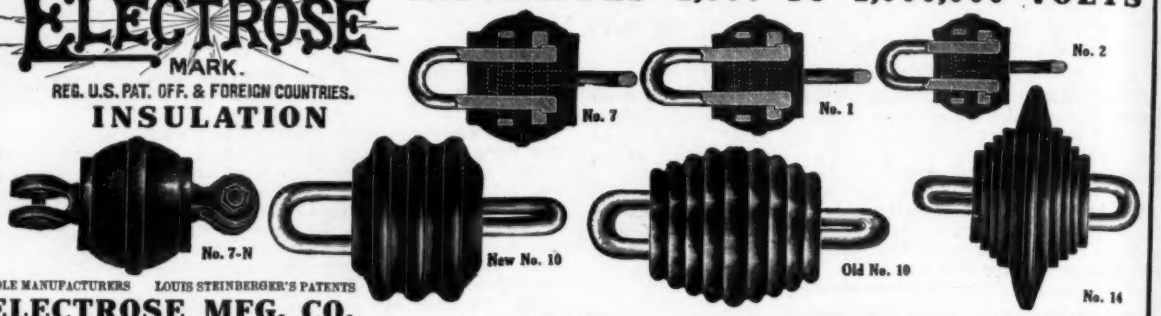

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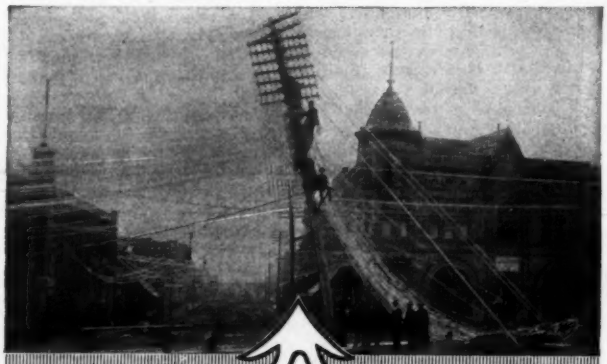

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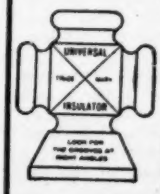

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